THE IRON TRADE REVIEW

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INTO THE FUTURE

MANUFACTURERS LOOK WITH CONFIDENCE.

Corporation Will Need Its Own Steel—Pig Iron for Prompt Shipment Very Scarce—Car Shortage Grows Worse.

The market throughout shows greater strength, and there is more positive evidence of the confidence of manufacturers that prosperity will continue for many months. The newly announced policy of the United States Steel Corporation to discontinue making long-term contracts for billets and to abrogate present contracts, as soon as can be done, indicates a belief that it will need in its own mills all of the crude steel that it can produce. In some cases, extraordinary inducements have been made to buyers of semi-finished material to reduce tonnages on contracts. Furnace men, believing that the upward tendency of prices will continue, are showing more hesitancy in selling their product far into the future, and manufacturers of finished products, especially of equipment for cars, are not eager to book orders, as they are of the opinion that higher prices will prevail before many months.

Pig Iron Conditions. Although in New York, Cleveland and other centers, sales of pig iron were more numerous than during the preceding week, not many large sales have been made. The scarcity of all grades for this year's delivery has been emphasized, and it is significant that some of the largest melters have been compelled to come into the market and pay high prices for spot iron, on account of tonnages provided for by contract not being sufficient to meet requirements. A feature of the unusual search for pig iron for delivery this year and the first quarter of 1907 was an inquiry received from New York by a Chicago concern for 10,000 tons. For prompt delivery No. 2 foundry has been sold as high as $22.00 valley, while $17.50 Birmingham has been paid for the southern product. The advisability of importing pig iron is being given more consideration, but nearly all iron received up-to-date from foreign ports is to be used in the manufacture of products for export.

Mills are Very Busy. Great activity continues in the mills. Actual specifications of the Illinois Steel Co. aggregated 430,000 tons, while unfilled contracts provide for heavier tonnage, than ever before found at this time of the year on the books of the company. The demand for plates continues strong, orders, in some cases, for cars extending up to October, 1908. The heavy orders for cars recently placed give much strength to the bar market. The recent announcement of an advance in the price of wire products was in reality a reaffirmation of the old schedule and a determination to eliminate the cutting which had been done for some time.

More Cars are Needed. Increasing complaints are heard of an inadequate supply of cars; even the railroads themselves are suffering from delayed shipments of rails, and coke and ore interests could use many more cars than they are getting. In spite of this condition, however, the ore shipments for September show a handsome gain over those of September of last year.

Scrap Market Improves.. The scrap market is strong in most places, especially in Chicago and New York, but in Pittsburg, an effort to advance the price of heavy melting scrap unduly was unsuccessful. The coke market is firm with production slightly decreased.

Structural iron foremen in the Pittsburg district have held a number of recent meetings looking toward the formation of a permanent organization. This will be called the "Erectors' Social Society," and it is distinctly stated it will not be a labor organization.

BLAST FURNACES

And Open-Hearth Plants to be Built by the Steel Corporation.

(Special Telegram.)

New York, Oct. 3.—The United States Steel Corporation plans building three or four new blast furnaces in the Pittsburg district. The place is not decided upon, but Duquesne and Donora are favorably considered. The corporation also expects to build from twenty-four to thirty additional open-hearth furnaces in the Pittsburg and Cleveland districts, for which plans are not complete. At Gary it is pushing work on four blast furnaces and twenty-eight open-hearth furnaces, also on building the town.

It is understood that a contract for the City Investment Co. building in this city has been let, involving 14,000 tons of steel. Contractors are also figuring on 10,000 tons for the Consolidated Exchange building.

LACKAWANNA SHIP DEAL.

Negotiations have been begun looking to the taking over by the American Ship Building Co. of the plant of the Ship Owner's Dry Dock Co. at Chicago, which is largely owned by the leading stockholders in the Lackawanna Steel Co. The plant is given a valuation of $1,000,000. If the deal is consummated, reliable reports are that in return the Lackawanna Co. will place an order with the American Ship Building Co. for a large fleet of freighters, probably consisting of eight vessels, of something like 65,000 tons carrying capacity, for 1908 delivery. Negotiations have been considerably embarrassed during the past week by premature publication of the projected deal and latest reports are that the matter has practically been dropped.

UNABLE TO OPERATE.

(Special Telegram.)

Pittsburg, Oct. 3.—The McClure Co., Washington, Pa., whose plant had been idle since June until a few days ago, when an attempt was made to operate it, closed last night, waiting for more men. One of the five mills was operated double turn two days with non-union men. Amalgamated men showed no disposition to return.

THE WEEK IN IRON CENTERS.

PITTSBURG.

Important Action Concerning Crude Steel.—Market Very Strong.

Office of THE IRON TRADE REVIEW, 521 PARK BUILDING, Oct. 2

The whole tone of the market is stronger. Transactions are not as heavy, as consumers are bought so far ahead, while there is greater pressure for deliveries.

The pig iron position has not improved. Practically all the northern interests are oversold and behind on deliveries. On an inquiry for 1,000 tons for prompt shipment to Cleveland by the Westinghouse Electric & Mfg. Co., covering its No. 3 grade, equal to regular No. 1, none of the Pittsburg interests were able to bid, as they could only make the delivery by taking iron already overdue to previous buyers. While a number of furnaces have been blown in after relining, a great many are working on very thin linings and may have to go out at any time. In the four days ending Monday seven inches of rain fell in Alabama, filling up the limestone quarries and greatly hampering operations in all directions.

The makers of light rails from new steel have advanced prices a dollar a ton, making sections 25 to 45 pounds $32 in carload lots and $31 in large lots. The mills are sold up for several months.

The United States Steel Corporation has decided to further abrogate contracts for furnishing billets and sheet bars on contracts which give either party the privilege of terminating the contract on six months' notice, and not to renew as they expire, long time contracts, which contain no such provision. On July 1 last, notice was given to terminate several contracts on Jan. 1, and on the latter date some further notices will be given on similar contracts which were allowed to stand. Later other such contracts will be terminated. In the next few months several contracts, not containing any such provision, which were made for from two to five year terms, will expire, and these will not be renewed. The steel corporation has increased its finishing capacity much more than its steel making capacity, and is unable to maintain so many contracts, and give good deliveries. By this curtailment in the next few months it will be enabled to make better deliveries on the remaining contracts. As finishing capacity is further increased more contracts will be terminated. In future the steel corporation will be a seller of steel only as it may have surplus tonnages, and these will be disposed of by outright sales, covering deliveries for the time it is certain the steel will be available.

The attempt to boost prices on heavy melting scrap has failed. Late last week two sales of 10,000 tons each were made to the La Belle Iron Works and the Sharon Steel Hoop Co., at $17, delivered. The price is in accordance with recent quotations in these reports, but not in accordance with the vigorously expressed views of the majority of dealers, who contended that prices should be much higher. On the other hand, old car wheels have scored a notable advance, on account of the large car orders lately placed. Sales have been made at as high as $22, delivered.

Pig Iron.—Sales of steel making pig have been very light, large consumers refusing to pay the high prices asked, while the small consumers are buying now and then. The only prices at which even a moderate tonnage is offered are $19, valley, for Bessemer and $18.75, valley, for basic. Very small lots which go through middlemen's hands are commanding from 25 to 50 cents premium. As noted, the Westinghouse Electric & Manufacturing Co. has been in the market for 1,000 tons of foundry iron equal to the ordinary No. 1 grade, for prompt shipment to Cleveland, and has had difficulty in getting quotations from local interests, as they are behind in deliveries on iron already sold. The market is pretty well settled at a minimum of $20, valley, for any delivery before the close of the year. For next year the market remains at $18.25 to $18.50, valley, for No. 2. Forge is rather quiet, at unchanged prices. We quote for first quarter delivery:

Bessemer Valley	19.00
Bessemer, Pittsburg	19.85
No. 1 Foundry, Pittsburg	19.60 to 19.85
No. 2 Foundry, Pittsburg	19.10 to 19.35
Gray Forge, Pittsburg	18.10 to 18.35
Basic, Valley	18.75
Basic, Pittsburg	19.60

Steel.—The exchange deal of scrap for billets between a prominent Pittsburg steel mill and an Ohio valley open-hearth works has been renewed into next year. As noted, the Carnegie Steel Co. is gradually curtailing its outside contracts for the furnishing of billets and sheet bars, allowing to go unrenewed all contracts which have no provision for termination on six months' notice, and purposing to cancel some more of these by notice given Jan. 1 next. The company has almost reached the position of being able to finish all its steel output, and will reach that position completely in the near future, when finishing mills will have to turn more to the mills further west which have some surplus steel for the market. Deliveries are no better, for, while production has increased, the demand is also larger. We continue to quote billets at $28 to $29 for Bessemer and $29 to $30 for open-hearth. Sheet bars are nominally $30, Pittsburg.

Ferro-Manganese.—The market is slightly easier. It is understood that a number of middlemen have had ferro on which they had to give shipping instructions and slightly lower prices were named in consequence. Ferro is to be had for prompt shipment at $85, delivered Pittsburg, and at $81 to $82 for delivery over the balance of the year. The foreign producers are oversold and it is believed the softening in the market is only temporary, as demand promises to be very heavy all winter. Ferro-silicon, 50 per cent, is quoted at $97 for the remainder of the year, and 12 per cent at $32.50 to $33.

Skelp.—The market continues strong, with specifications good on old contracts, but not much new business. We continue to quote:

Bessemer, grooved, 1.62½c to 1.67½c; sheared, 1.67½c to 1.72½c; basic, grooved, 1.65c to 1.70c; sheared, 1.70c to 1.75c; iron skelp, grooved, 1.80c to 1.85c; sheared, 1.90c to 2c.

Muck Bar.—There is scarcely any muck bar to be had, mills being so well sold up. We quote prime all-pig muck bar at $31 Pittsburg, and scrap bars at $27.50 to $28.

Hoops and Bands.—Specifications are coming in freely on the new contracts which have been made in the past two or three months on the 1.90c basis. The shading on the part of a few middlemen who had old contracts has disappeared. We quote:

Hoops, 1.90c in carload lots, and 2c on less than carload lots; bands, 1.50c base, half extras as per standard steel card. Prices f. o. b. Pittsburg.

Structural Material.—The mills continue as far behind as ever. No large contracts have been placed, but there is the usual run of small business. We quote:

Beams and channels, 15-inch, and

under, 1.70c; over 15 in., 1.80c; zees, 1.70c; tees, 1.75c; angles from three to six inches, inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Plates.—Specifications are gradually coming in on the plates for the steel cars lately ordered by the Vanderbilt, Pennsylvania and other roads. The Bessemer & Lake Erie has just placed orders for 400 steel cars. The plate mills continue congested with tonnage, and are prorating shipments. We quote:

Tank plate ¼ inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill, Pittsburg. Light plate schedule, No. 10, 1.70c; Nos. 11-12, 1.75c; Nos. 13-14, 1.80c; Nos. 15-16 1.90c. Extras on the regular plate schedule are as follows per 100 pounds, boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates, varying not more than four inches, in width at ends, narrowest end not being less than 30 inches, 0.10c; complete circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gauges under ¼ inch to and including 3-16 inch plates on thin edges, 0.10c; under 3-16 inch to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Merchant Bars. — Deliveries are still farther behind, as specifications have been good and there is little further improvement in output. The only important steel bar producers still quoting 1.50c are the steel corporation and the Jones & Laughlin Steel Co. Deliveries can be had from them in from eight weeks to three months, according to size. Iron bars remain very firm at 1.60c, Pittsburg, for outside shipment, while for strictly Pittsburg delivery the market is 1.60c to 1.65c, delivered. We continue to quote:

Common iron bars, 1.60c, Pittsburg, in carload lots, 1.65c in less than carloads; Bessemer steel bars, 1.50c plow and cultivator, 1.50c net; channels, angles, zees and tees, under three inches, 1.60c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds, of a size, 0.30c advance.

Steel Bars.—The market is firm with specifications excellent and deliveries somewhat behind. We continue to quote as follows:

Cold rolled and ground shafting, 50 per cent off in carload lots, and 45 off in less than carloads, delivered in base territory; tire steel, 1.70c to 1.80c; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flat, 1.50c to 1.55c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.05c to 2.10c. The price of planished and machine straightened tire is 1.70c base half extras as below. Iron finished tire up to 1½ inch by ½ inch, 1.65c base half extra tire list. Iron finished tire 1½ inch by ½ inch and over to be sold on regular bar basis of 1.50c base; half extra steel card.

Rails and Track Material.—Inquiry for standard sections continues, but there have been no large sales. Quotations on light rails from new steel have been advanced $1 per ton. Demand is heavy and also for rerolling rails. We quote:

Fifty pounds and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails, 16 pounds, $32; 20 pounds, $33; 25 to 45 pounds, $31 to $32; angle bars for standard sections, 1.50c; spikes, $2.30 to $2.35.

Merchant Pipe.—Merchant pipe continues very firm at the minimum prices quoted for some time. The independent mills are all well filled up, as is the leading interest, and there would be difficulty in getting quick delivery on new business, but consumers are all well covered. The year has been an excellent one for line pipe, the tonnage placed having been very heavy and prospects are that next year will be equally good. We continue to quote the extreme price on merchant steel pipe at 81 and 5 off, on sizes ¾ to six inches inclusive. The regular official list on consumers' carloads remains as follows, jobbers' carloads being one point larger discount:

	Steel		Iron	
Consumer's Carloads	Black	Galv.	Black	Galv
⅛ and ¼ inch	71	55	67½	51½
⅜ inch	73	59	69½	55½
½ inch	75	63	71½	59½
¾ to 6 inches	79	69	76	66
7 to 12 inches	74	59	71	55½
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch	64	52	60½	48½
½ to 4 inches	71	59	67½	55½
4½ to 8 inches	67	55	63½	51½
Double extra strong plain ends, ¼ to 8 inches	60	49	56½	45½

Wire and Wire Nails.—Mills are well sold on contracts recently taken at the concession of five cents a hundred, while it is claimed that since the advance a fortnight ago the prices based on $1.85 for nails have become the absolute minimum. Specifications are very good and mills are behind in shipments, a decided shortage being reported in the northwest. The action of the cut nail association last week in advancing the official price of cut nails to $1.90 Pittsburg, is not felt in the market, which remains at $1.85 Pittsburg. We quote, wire products, as follows:

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.90, and less than carload lots, $2; painted barb wire, $2 for jobbers in carloads; retailers in carloads, $2.05, and less than carloads, $2.15, with 30c for galvanizing; plain wire, $1.70 to jobbers and $1.75 by carload.

Sheets.—The mills are sold up so far ahead and specifications have been so heavy that it generally requires a premium to bring out any prompt delivery, and while the total tonnage of such business is not large, it is a fact that from $2 to $3 a ton premium has been paid on carload lots of ordinary sheets for shipment within a week, while a dollar a ton has been paid for guaranteed shipment within four weeks. Blue annealed sheets are regularly bringing a premium of a dollar a ton for any early delivery. Corrugated roofing is also bringing premiums in some cases, and we are advised that $1.85 has been paid on a carload of painted roofing, for spot shipment. It is stated that there is no likelihood now of any advance in official prices, which remain as follows, and are very firmly held:

Black steel sheets, box annealed, cold rolled, one pass: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.65c; No. 30, 2.75c. Galvanized, Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.80c; No. 30, 4.05c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation. $3.10 per square for No. 26 galvanized, 2½ inch corrugation. Quotations f. o. b. Pittsburg on large lots.

Tin Plate.—The McClure Co., having a five-mill tin plate plant at Washington, Pa., inaugurated an attempt on Monday of this week to operate non-union. This is the only mill, formerly union, which failed to sign the Amalgamated Association scale last summer, and the plant has been idle since June. Men were engaged in various non-union towns, and on Sunday and Monday morning about 75 arrived in Washington. The old employes

were very active, under the direction of President P. J. McArdle, of the Amalgamated Association, who is conducting the strike in person. At Amalgamated Association headquarters in Pittsburg it is stated that nearly all the men who arrived on Monday or earlier were induced to leave the town, but other men are coming in. The result will probably hinge upon whether the old men go back to work, as it is very hard to pick up new men, with the sheet and tin plate industry of the country so active. Tin plates are very strong, and in some cases premiums are being paid for very prompt shipment. Orders are being entered by some of the independent mills for deliveries in the second quarter of next year, at 10 cents advance over the present market, but as such contracts are guaranteed against decline, this feature merely means that if there are market advances meanwhile the customer will pay them, up to 10 cents. The leading interest is not less than eight weeks behind in deliveries on all grades, while on some special orders, particularly open-hearth stock, it is three or four months behind and is suggesting in some cases that its customers take Bessemer steel, if possible. The independents are not so far behind, as they have been chary in making forward sales on account of the close margin between raw materials and finished products. The leading interest is operating about 223 of its 252 tin mills, and is preparing to start the Morewood works, at Gas City, Ind. It already has more tin mills in operation than it has had at any time since the second quarter of last year.

We continue to quote the official price as follows:

$3.75 per base box, f. o. b. Pittsburg, 14 x 20 100-pound cokes, terms 30 days, less two per cent off for cash in ten days.

Old Material.—The negotiations on heavy melting scrap noted last week ended in the sale on Friday of 10,000 tons to the La Belle Iron Works at $17, delivered, for delivery over the balance of the year, and a similar sale to the Sharon Steel Hoop Co. These sales have settled the status of the heavy melting scrap market for this year, and the efforts of a number of interests to bull the market for very high prices have been discontinued. The Carnegie Steel Co. has been willing to pay $17 for the choice grades of heavy melting scrap it demands, and has picked up a few lots in the past week. In no circumstances will it pay more than this price. Dealers' bidding prices are generally in the neighborhood of $16.50, delivered. The heavy car orders lately placed have resulted in an excited movement in old car wheels, which have advanced sharply. Several sales of large lots have been made at $21 and on up to $22 in several instances. Car wheels are easily the strongest item on the whole list. Prices on sheet scrap are fictitious, as dealers have been making contracts with sheet mills at very high prices, agreeing in some instances to pay $14.75 at works. Such contracts have often failed of being carried out in the past. We quote the old material market very firm, but without the predictions of very high prices this winter which have characterized it of late. We quote prices as follows:

Heavy melting stock $16.50 to $17; No. 1 cast scrap, $16.50 to $16.75; cast borings, $10 to $10.50; bundled sheet scrap, $15.00 to $15.50; malleable scrap, $15.50 to $16; railroad wrought scrap, $19.50 to $20; low phosphorus scrap, $21.50 to $22.50; wrought turnings, $12 to $12.50; busheling scrap, $15.50 to $16; iron axles, $29; old rails, rerollers, $19 to $19.50.

Coke.—Demand continues heavy for next year. The ideas of coke producers are very firm. The number of operative ovens has increased materially in the past few weeks through the completion of new ovens, but, as the supply of men is limited, the starting of new ovens has merely drawn men from the older operations and the total production is not measurably increased. The H. C. Frick Coke Co. continues to bid for coke in the open market, but has not obtained a great deal. Its buying, however, serves to maintain a very firm tone in the general market. We quote strictly Connellsville furnace coke for prompt shipment at $2.75 to $2.85 and 72-hour foundry coke at $3.60 to $3.75. Foundry coke for next year is quoted at $3.50 to $3.60. The Connellsville *Courier's* detailed report of the operation and output of the Connellsville region for the week ending on Saturday, Sept. 22, shows a total estimated production of 278,041 tons, a small loss compared with the production of the previous week.

In the lower Connellsville region the total estimated production last week was 109,510 tons.

The Cleveland Punch & Shear Works Co., through C. W. Courtney, engineer, has awarded contracts for a new two-story shop building 80 x 116 feet and a two-story office building 40 x 80 feet.

CHICAGO.

Pig Iron Scarce and Higher for Prompt Shipment.—Market Very Strong.

Office of THE IRON TRADE REVIEW, 1332 Monadnock Block, Oct. 2.

Slowly, but surely, the iron and steel market is creeping towards a state of affairs that existed in 1902. The dominant note locally is a demand for more crude steel. Everybody is short and appeals for assistance are general. Where relief can come from, unless abroad, none can tell, but because of the variable quality of German and English made steel, objections are rising thick and fast to any importations. Domestic mills, however, cannot cope with present requirements and deliveries on contract specifications are limited to the lowest possible extent. The Illinois Steel Co., by the force of circumstances, must become less of a factor in billet supply every month. It has no contracts that it cannot break and the possibilities are increasing that its customers will have to go elsewhere for a large portion of their requirements before many weeks are passed. Specifications on this company for finished material are coming in faster than they can be attended to. Today they aggregate upwards of 430,000 tons while unfilled contracts represent a larger tonnage than ever before booked at this time of the year in the history of the company. It is behind on deliveries, fifteen weeks being required on some sizes of steel bars.

Pretty much this same condition exists in pig iron for this year's delivery. For prompt shipment, pig iron is scarce all over the country, as is evidenced by an inquiry from a New York melter for 10,000 tons. The top price obtained today is $17.50 Birmingham for No. 2 foundry, but there is talk that the market will go to $20 before the year is ended. Offerings for next year's delivery are coming out in larger quantities, one sale for over 10,000 tons having been closed, and another for 6,000 tons pending.

Scrap still keeps its bullish tone and bar iron has again gone to the 1.55c basis. Foundry coke is reaching for higher levels, $4 ovens having been asked for the Connellsville product. The advance in wire products of $1 a ton announced last week was incorrect. We should have stated it was a determination to eliminate the cutting that has been done and hold prices fast to the schedule of $1.85

Pittsburg for wire nails and $1.70 for smooth wire.

Pig Iron.—Significance is attached to the inquiry received by a local house from a New York melter for 10,000 tons of iron, 3,000 tons for delivery this year and the balance in the first quarter of 1907. The buying in the east has been more active of late than in the west, but the pressure for early deliveries there is no greater than here. Neither is iron any more plentiful in the west for nearby shipments and whatever is offered is quickly snapped up by local melters. Prices for metal on track have stiffened perceptibly in the past week and for car lots $17.50 Birmingham is asked for No. 2 foundry, and $21 Chicago for northern No. 2. One sale of 1,500 tons of southern iron was made on the basis of $17 Birmingham. Irregularities are noticed, however, in quotations for the first half and some generous purchases of southern iron have been made at 25 cents and 50 cents a ton below the nominal southern quotation of $15.50 Birmingham. To the same extent, northern iron is shaded for 1907 shipments. It is to be noted, however, that this weakness in both products is fast disappearing under the improved inquiry for that delivery. Two transactions are now pending, one for 6,000 tons of southern No. 2 foundry, and another for 3,000 tons of malleable Bessemer, while an increasing volume of smaller wants is up for figures. The largest sale of the week was of northern iron, the tonnage involved running into five figures. We have revised our prices and quote as follows for the first half of 1907:

Lake Superior charcoal	$20.50 to 21.00
Northern Foundry No. 1	20.50 to 21.00
Northern Foundry No. 2	20.00 to 20.50
Northern Foundry No. 3	19.50 to 20.00
Northern Scotch Foundry	20.50 to 21.00
Ohio Strong Softeners No. 1	21.75 to 22.25
Ohio Strong Softeners No. 2	21.25 to 21.75
Southern Foundry No. 1	19.90 to 20.40
Southern Foundry No. 2	19.40 to 19.90
Southern Foundry No. 3	18.90 to 19.40
Southern Foundry No. 4	18.40 to 18.90
Southern No. 1 Soft	19.90 to 20.40
Southern No. 2 Soft	19.40 to 19.90
Southern Gray Forge	17.40 to 17.65
Southern Mottled	16.90 to 17.40
Southern Silveries (4 per cent to 6 per cent Silicon	21.90 to 22.40
Jackson Co. Silveries, 8 to 10 per cent Silicon	24.30 to 24.80
Alabama and Georgia Car Wheel	25.65 to 26.15
Malleable Bessemer	20.50 to 21.00
Standard Bessemer	21.30 to 21.80
Basic Iron	19.40 to 20.35

Rods and Billets.—Inquiries for billets follow in rapid succession. This week the largest offer was for 1,000 tons. The order could not be placed in this market, and the buyer has gone east in the hope of getting an early shipment there. All the local mills are crowded with specifications, but their internal requirements continue so heavy that shipments on merchant contracts are seriously retarded. So far as can be learned, neither of the inquiries mentioned last week, aggregating 20,000 tons of forging billets, and 11,500 tons of rolling billets, has been placed. It will be six to nine months before local producers are in position to take on much new business. Forging billets remain at $36 to $38 Chicago; sheet bars $30 Pittsburg, and wire rods $34 to $35 Pittsburg.

Iron and Steel Bars.—A large tonnage of bar iron is under negotiation for car building purposes, the contract for which is expected to be closed within a few days. Miscellaneous demand for iron is active and prices again show a disposition to harden. Premiums of $1 a ton over the base price are being paid for quick deliveries. Including the premium, the minimum price is 1.55c Pittsburg. New tonnage for steel bars continues light, consumers bending their efforts to get the material due on their contracts. Specifications are heavy, but deliveries are very slow, the average delay being from two to three months. We quote carload lots, mill shipments, Chicago delivery, as follows:

Bar iron, 1.71½c; soft steel bars and bands, 1.66½c, half extras; soft steel angles, less than 3 x 3 1.76½c; hoops, 2.06½c base, full extras; old rail stock, 1.65½c. We quote bar iron from stock, 2.20c, full extras; soft steel rounds and squares, 3 inches and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by 1⅛-inch and larger, $2 per 100 pounds base; 4½ inches x 5 inches and 6 inches x 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $1.85 to $1.95 half extras; soft steel hoops, $2.30 to $2.40 full extras. Other sizes not mentioned above, $1.85 per 100 pounds base, plus half extras.

Sheets.—New business and current specifications are both heavy. Deliveries are slow because of the shortage of steel, and the deflection to jobbers' channels on this account is growing. We quote carload lots, mill shipments, as follows:

Black sheets, Nos. 8, 9 and 10, 1.85c Pittsburg; No. 28 gauge, 2.50c Pittsburg. Galvanized sheets, No. 28 gauge, 3.55c to 3.60c Pittsburg. Freight to Chicago is 16½c per 100 pounds.

Jobbers' prices on less than carload lots, from local store, are as follows: Black sheets, No. 10, 2.30c; No. 12, 2.35c; No. 14, 2.40c; No. 16, 2.50c; Nos. 18 and 20, 2.70c; Nos. 22 and 24, 2.75c; No. 26, 2.80c; No. 27, 2.85c; No. 28, 2.90c; No. 30, 3.35c. Galvanized sheets, Nos. 10 to 20, 3.15c to 3.25c; Nos. 22 and 24 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 3.95c; No. 30, 5.10c to 5.15c.

Plates.—The demand for light mill plates continues extremely strong and some producers have had to call on other makers for aid in meeting their specifications. Deliveries on sheared plates are 90 days late; universal mills are not so congested and can give earlier shipments. Specifications continue heavy. Prices are firm. We quote mill shipments, as follows:

Tank steel, ¼-inch and heavier, up to 100 inches wide, 1.60c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago is 16½c per 100 pounds.

Jobbers' prices for shipment from local stocks are as follows: Tank steel ¼ inch and heavier, up to 72 inches wide, 2c to 2.10c; 72 inches up to 96 inches wide, 2.10c to 2.20c; 3-16 inch up to and including 60 inches wide, 2.10c to 2.20c; 3-16 inch, 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.15c to 2.25c; flange steel, 25c extra; heads, 25c extra.

Structural Steel. — Contracts for several new buildings to be erected in 'Frisco are pending, their aggregate steel requirements amounting to 2,500 tons. The largest structure will be the M'Ghee building, 1,000 tons. The plans for this were prepared just before the earthquake, but since that catastrophe they have been revised and a smaller building will be erected. The only 'Frisco contract let last week was the Lunin building, 500 tons, which went to the American Bridge Co. Another contract for a library was taken in New Orleans by this company, the steel involved amounting to 350 tons. Two small bridges for the Lake Shore & Michigan Southern have been placed with the Pennsylvania Steel Co., and the same interest has an inquiry for 1,000 tons of fabricated bridge material from another railroad. Specifications on the local mill are increasing in volume, but reasonably prompt deliveries can still be obtained on some sizes. We quote mill prices as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from that city to Chicago is 16½c per 100 pounds. Quotations from store are as follows:

All angles, three inches and larger, including six inches, $2.05 to $2.10 per 100 pounds; angles over six inches, $2.15 per 100 pounds base; beams, three inches to 15 inches inclusive, $2.05 to $2.10 per 100 pounds base; channels, three inches and larger, $2.05 per 100 pounds base.

Merchant Steel. — Specifications from the implement trade are crowding heavily upon mills. It is extremely difficult to get an early shipment, as most manufacturers have oversold their capacity and are anxious to avoid further obligations. We quote as follows:

Planished or smooth finished tire

steel, 1.86½c; iron finish, up to 1½ x ½ inch, 1.81½c; iron finish, 1½ x 1½ inch and larger, 1.66½c, base; channels for solid rubber tires, ¾ to 1 inch, 2.16½c, and 1⅛ inch and larger, 2.06½c; smooth finished machinery steel, 1.91½c; flat sleigh shoe, 1.71½c; concave and convex sleigh shoe, 1.96½c; cutter shoe, 2.35c; toe calk steel, 2.21½c; railway spring, 1.86½c; crucible tool steel, 6½c to 8c, and still higher prices are asked on special grades. Shafting, 50 per cent off in car lots and 45 per cent in less than car lots, in base territory.

Merchant Pipe.—Jobbers report the same heavy distribution of material as has prevailed for several months past; they are also optimistic in their view of the outlook. Mills are operating to full capacity, and making fairly prompt shipments. Prices are unchanged at 81 and 5 off the list, Pittsburg; Chicago discounts in car lots are as follows: ¾ to six-inch black steel pipe, 79.35; galvanized, 69.35. From store, local prices are 76½ to 77 per cent discount on the base sizes.

Boiler Tubes.—No dissatisfaction is expressed either by mills or jobbers over the volume of business under negotiation or the amount of specification coming in. Both are extremely satisfactory. Concessions in prices are unheard of. We quote as follows: 2¾ to five inches, steel, 68.35; iron, 55.35; seamless, 2¾ to 4½, 50.85. Less than carload lots from store base sizes are 60 per cent for steel; 47½ for iron, and 42½ for seamless tubes.

Cast Iron Pipe.—New business and specifications continue in satisfactory measure. Foundries are crowded with tonnage on the smaller sizes of pipe, and cannot give deliveries earlier than Jan. 1. The only large contract pending is that from the Steel Corporation for 10,000 tons to be laid in the new town of Gary, Ind. Prices are unchanged, but firm. We quote for Chicago delivery: Four-inch water pipe, $34; six, eight and ten-inch, $33; 12-inch and larger, $32; gas pipe, $1 a ton higher.

Rails and Track Supplies. — Local mills are combatting a car scarcity, and in several instances shipments of rails have been seriously delayed. Unfavorable weather and labor conditions have also affected the operation of western plants, and for some weeks the full output has not been obtained. The tonnage of standard sections carried over this year is expected to be unusually large. Demand for light rails and track supplies shows no abatement, the entire western output failing to meet current requirements. We quote as follows:

Bessemer rails, $28 and open-hearth, $29; light rails, Bessemer steel, 30 to 45-pound sections, $29 to $30; 25-pound, $30 to $31; 20-pound, $31 to $32; 16-pound, $32 to $33; 12-pound, $33 to $34, and lighter sections, down to 8-pound, $39.50 to $41.50, all f. o. b. mill.

On contracts for spikes and bolts when accompanied by rail orders, the Illinois Steel Co. is asking 2.10c to 2.20c for spikes, and 2.45c to 2.55c for bolts. On miscellaneous business from the general trade, however, other manufacturers are asking 2.45c Chicago, for spikes, 2.85c for bolts with square nuts, and 3c for bolts with hexagon nuts. Angle bars are held at 1.50c to 1.75c, according to the tonnage and delivery required.

Wire Products.—Our announcement last week of the $1 advance in wire products was erroneous to the extent that it did not change the schedule that has existed for several months past. It has been common knowledge for some time that prices have been shaded by all manufacturers where desirable business or customers were concerned, and it has simply been decided to put an end to this practice. Mill conditions are considered sufficiently strong to justify the exaction of the full schedule, and hereafter there will be no discrimination in favor of any buyer. The change, therefore, affects only those interests that have been able to shade the official list, and as such it is not an advance, but merely a reaffirmation or complete restoration of the present schedule. We, therefore, quote the present schedule as follows:

Wire nails, $2; painted barbed wire, $2.15; galvanized barbed wire, $2.45; smooth annealed wire, $1.85; smooth galvanized wire, $2.15; polished staples, $2.15; galvanized staples, $2.40. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—There is a good demand for foundry coke and prices continue firm. Standard 72-hour Connellsville brands are quoted at $3.50 ovens or $6.15 Chicago. West Virginia brands, $3.25 to $3.50 ovens, or $5.50 to $5.75 Chicago. Local Solvay coke, $6.15 Chicago.

Old Material.—Conditions are still very bullish. The railroad wrought material contained in the C. B. & Q. list offered last week, was purchased by the Republic Iron & Steel Co., which paid $17.60 East St. Louis for same. The Baltimore & Ohio is offering a list, comprising 4,500 tons which will be closed Oct. 7. Some large local melting interests have been in the market for cast scrap, one consumer taking 3,000 tons. Both this product and railroad wrought have since advanced, the former $1 a ton, and the latter 75 cents. Eastern buyers of scrap are sounding this market freely, and local dealers have no trouble in finding a market at stiff prices for their offerings. We have revised our prices, and quote gross tons, as follows:

Old Steel Rails (4 feet and over)	$17.50 to 18.00
Old Steel Rails (less than 4 feet)	16.50 to 17.00
Old Car Wheels	19.00 to 19.50
Old Iron Rails	25.50 to 26.00
Relaying Rails, subject to inspection	28.00 to 30.00
Heavy Melting Steel	16.50 to 17.00
Mixed Country Steel	13.00 to 13.50

We quote net tons, as follows:

No. 1 R. R. Wrought	$17.50 to 17.75
No. 2 R. R. Wrought	16.00 to 16.75
Shafting	17.50 to 18.00
Dealers' Forge No. 1	13.50 to 14.00
Wrought Pipe and Flues	11.75 to 12.25
No. 1 Cast, 150 pounds and less	15.75 to 16.25
No. 1 Mill	9.00 to 9.50
Mixed Busheling (No. 1 & No. 2)	11.50 to 12.00
Country Sheet	8.00 to 8.50
No. 1 Boilers Cut	11.00 to 11.50
Boiler Punchings	14.50 to 15.00
Iron Car Axles	24.50 to 24.75
Steel Car Axles	20.00 to 20.50
Iron Axle Turnings	11.25 to 11.75
Cast Borings	8.00 to 8.25
Mixed Borings, etc.	8.00 to 8.25
Machine Shop Turnings	9.50 to 10.00
Railroad Malleable	15.00 to 15.50
Agricultural Malleable	14.00 to 14.50
Stove Plate and Light Cast Scrap	12.00 to 12.50
Old Iron Splice Bars	20.00 to 20.50

CLEVELAND.

Renewed Activity and Higher Prices in Pig Iron.

Office of THE IRON TRADE REVIEW, BROWNING BUILDING, Oct. 3

Iron Ore.—Complete reports of the ore movements for September are not yet available. It is known, however, that shipments have been extremely heavy for that month, and will probably total about 5,200,000 tons, setting a new September record. The chief difficulty now met with is the scarcity of cars at lower lake ports. The beginning of heavy coal shipments and of other lines of early fall movements is responsible for considerable of this trouble which is practically inevitable at this time of the year. Furnace yards are well filled and there is consequently less dispatch in unloading cars, vessels will now have longer delays at docks, and decreased shipments are certain from now on. On the range railroads car facilities are improved and dock facilities are also more ample as the new capacity at Duluth is now available. The 1907 ore situation remains unchanged.

Pig Iron.—After a period of comparative inactivity the local market has taken another spurt and inquiries totaling a heavy tonnage have come out. As a result those Cleveland furnaces which have iron available for first quarter delivery have advanced their price 50 cents to $19.50 Cleve-

land for No. 2 foundry, and are booking readily at this figure. Sales of 1,000 tons are not uncommon for advanced delivery, and there is an inquiry out for 5,000 tons of malleable for 1907 shipment. A considerable number of foundries in this district are not provided for far ahead, and it is predicted will meet with much difficulty in covering. Basic for advanced delivery is increasingly scarce with the current quotation $19 valley. Spot iron continues to bring almost any price the producer asks, one lot of several hundred tons of No. 2 foundry selling during the week at $22 valley. For 1907 delivery the price is $18.50 to $19. Spot southern iron is bringing $17 Birmingham.

We quote, Cleveland delivery, first quarter of 1907, as follows:

Bessemer	$19.00 to 19.50
No. 1 Foundry	19.50 to 20.00
No. 2 Foundry	19.50
No. 3 Foundry	18.50 to 19.00
No. 2 Southern	19.10 to 19.60
Gray Forge	18.00 to 18.50
Gray Forge, Southern	16.00 to 16.50
Lake Superior charcoal	20.00 to 21.00

Coke.—The car famine has become a prominent factor in the coke industry. Box cars for foundry coke are almost impossible to obtain, and foundries are given option of using hoppers, which are hard to unload, or going without. Labor is scarce in the coke region and much poor quality coke is resulting from the use of green labor. Furnace coke is stronger at $3.25 for the first half, or $3 through the year, and foundry is scarce at $3.75.

Finished Materials.—The extremely heavy business of car building plants is the strongest factor in keeping the finished material market firm. Bar iron is especially active for this reason. During the week the Barney & Smith Car Co. has purchased 6,000 tons, half from the leading interest, with independents providing the balance, at 1.60c Pittsburg. The Pressed Steel Car Co., it is understood, will shortly be in need of some 15,000 tons and other big car business is in sight. Local bar mills will carry over a lot of unfilled orders. Plates are somewhat easier, and their deliveries are possible if orders are well placed. The sheet situation is as tense as ever, except that some small mills are offering quick deliveries on certain sizes at a liberal premium. Business in structural materials is light and will doubtless decrease still more with the advent of cold weather. Premium business is smaller, as the heavy new capacity is keeping deliveries prompt. The billet situation is unchanged, and sales are few, as the price is too high for competition with concerns having their own steel supply.

Old Material.—Mills are buying quite heavily though objecting to dealers' prices. No sacrificing is being done, however, and an advance is looked for within the near future. We have revised our prices and quote, Cleveland delivery, as follows, gross tons in first paragraph:

Old iron rails	$24.50 to 25.50
Old steel rails (over 6 feet)	17.50 to 18.50
Old steel rails (under 6 feet)	17.00 to 17.50
Old car wheels	17.50 to 18.00
Steel boiler plate	15.00 to 15.50
Steel axles	21.00 to 22.00
Malleable iron (railroad)	16.50 to 17.00
Malleable iron (agricultural)	14.50 to 15.00
Heavy steel	16.50 to 17.00
Country mixed steel	14.50 to 15.00

We quote net tons as follows:

No. 1 R. R. wrought	$18.00 to 18.50
No. 1 busheling	14.50 to 15.00
No. 1 machine cast	15.25 to 15.75
Iron axles	23.50 to 24.50
Axle turnings	11.00 to 11.50
Wrought turnings (free from cast)	10.00 to 10.50
Grate bars	12.00 to 12.50
Pipes and flues	14.00 to 14.50
Tank iron	12.00 to 12.50
Hoop and band iron	9.00 to 9.50
Sheet iron	8.00 to 8.50
Wrought drillings	10.00 to 10.50
Stove plate	12.00 to 11.50
Cast borings	8.00 to 8.50

CINCINNATI.

Supply of Spot Iron Decreased and Prices Somewhat Irregular.

October 1.

Pig Iron.—There has been no apparent change in the situation during the past week, excepting possibly that the lines have been drawn a shade closer and the available supply of spot iron materially decreased. Requirements in the way of near by delivery continue to manifest themselves for more or less tonnage and general conditions are very strong. Prices in this connection are somewhat erratic and largely contingent upon circumstances and the individual cases involved. The general trend, however, for delivery during this year shows southern No. 2 quotable from $16.50 to $17 Birmingham, with $15.50 quite well established as the ruling price for 1907. Several furnaces, both north and south, have declared their intention to withdraw from the market entirely owing to the labor situation and difficulty in securing an ample supply of coke. The car situation, especially in the south, is fast becoming a serious matter and consumers are making strenuous efforts to secure iron due on contracts. The market for the lower grades has developed wonderfully during the past two or three weeks, and one of the large companies is said to have secured in the neighborhood of 3,500 tons at prevailing quotations. The situation in the north is perhaps without a parallel, furnaces being sold up tight for the remainder of the year and largely into next. One large consumer of southern Ohio is in the market for about 4,000 tons of malleable, delivery to be made during the first six months of next year. A Virginia pipe company wants 3,000 tons of No. 3, No. 4 and gray forge, same delivery, while another melter in this territory is calling for about 2,500 tons, foundry grades. For delivery over the balance of this year we quote, f. o. b. Cincinnati, as follows:

Southern Foundry No. 1	$20.00 to 20.50
Southern Foundry No. 2	19.50 to 20.00
Southern Foundry No. 3	19.00 to 19.50
Southern Foundry No. 4	18.10 to 18.25
Southern Foundry No. 1, soft	20.00 to 20.50
Southern Foundry No. 2, soft	19.50 to 20.00
Gray Forge	17.25 to 17.50
Northern Foundry No. 1	20.65
Northern Foundry No. 2	20.15
Northern Foundry No. 3	19.65
Jackson County Silvery, 8 per cent	23.15
Southern Charcoal	25.50 to 26.00

Finished Material.—The steel situation is strong with bar products very active. Rivets and spikes are in great demand with structural lines reaching into next year. We quote: Bars at 1.73c, half extras, with dealers quoting 1.85c for iron and steel out of store. Galvanized sheets No. 10 and No. 12, in car lots are 2.68c. We quote black sheets, No. 27 at 2.53c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.90c; No. 27, 2.70c; No. 16, 2.25c; No. 14, 2.20c; No. 12, 2.15c. Tank plates are firm and sell out of store at 2c to 2.10c for ¼-inch and 2.10c for 3-16 Nos. 8 and 10. Beams and channels are quoted at 2.25c to 2.35c from stock and angles at 2.10c to 2.15c for base sizes.

Coke.—Market is strong, demand good and shipments moving forward with fair regularity. Prices in the leading coke producing districts are as follows.

Wise County, Va. Furnace Coke prompt shipment	$2.50 per ton
Wise County, Va. Foundry Coke on contracts	3.25 to 3.50 per ton
Pocahontas Furnace Coke prompt shipment	$2.65 to 2.75 per ton
Pocahontas Foundry Coke on contracts	2.75 to 2.85 per ton
Connellsville Furnace Coke prompt shipment	2.60 to 2.85 per ton
Connellsville Foundry Coke on contracts	3.65 to 3.75 per ton
New River Foundry Coke on contracts	3.00 to 3.25 per ton
New River Furnace Coke, prompt shipment	2.25 to 2.50 per ton

†Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.65 to $1.70 per ton on $9.00 pig iron, plus 17 percent of the advance on pig iron above $9.00 Birmingham.

Old Material.—Prices are firm and well maintained. Considerable scrap is being thrown on the market for which there is a ready sale. We quote, f. o. b. Cincinnati, as follows:

Old No. 1 railroad wrought, net tons	$17.50 to 18.00
Cast machine and foundry, net tons	14.50 to 15.00
Old iron rails, gross tons	23.50 to 24.00
Old steel rails, gross tons	17.50 to 18.00
Old short lengths, gross tons	17.00 to 17.50
Old iron axles, net tons	23.00 to 24.00
Heavy melting scrap, gross ton	19.00 to 19.50
Stove plate, net tons	10.50 to 11.00
Wrought turnings, net tons	10.00 to 10.50
Cast borings, net tons	7.50 to 8.00
Car wheels, gross tons	17.00 to 18.00

NEW YORK.

Large Sales of Basic Pig.—Pressure for Delivery.—Premiums on Plates.

Office of THE IRON TRADE REVIEW, Room 1315, No. 150 Nassau St., Oct. 1.

Pig Iron.—The volume of business has been large, the total tonnage disposed of being fully a third greater than that of the preceding week. Sales have included a number of lots of foundry iron for forward delivery but much of the purchasing of this grade involved a guarantee for quick shipment. The demand has come from consumers who find their requirements greater than anticipated, but more especially from melters who have been disappointed in the matter of deliveries on contracts placed earlier in the season. Transportation difficulties are also becoming a factor in the trade. Prices have further hardened. All in all, the danger of a runaway market has not by any means disappeared. It may become acute at any moment.

The sales of foundry grades included several lots of considerable size, one of 3,000 tons being booked for delivery during the present year. There were purchases of Alabama iron in lots of 600, 500 and 400 tons each, and a great number in smaller quantities. Tennessee iron sold on the basis of $17.50 Birmingham, for delivery during November of this year, and for the first quarter of 1907 at $16. Several thousand tons of Virginia, No. 2, brought $18.25 and $18.50 at the furnace for forward delivery and $19 has been refused for shipment during the remaining months of this year. Sales of spot metal have been made at very irregular prices.

Transactions in basic iron included contracts for 30,000 tons for nearby and forward delivery, at prices materially higher than those which prevailed when the last previous purchases of magnitude were made some weeks ago. A still larger tonnage is under negotiation, and if the offers made result in business, it will be on the basis of another advance.

A few thousand tons of gray forge were sold during the week, also at higher prices, and other contracts are likely to be made within a few days.

Import iron is beginning to receive consideration in the market. Arrangements were made during the week for several shipments of foreign iron, especially high silicon grades. Lots aggregating 1,200 tons which will be shipped to this port will probably all be used in the manufacture of re-export products, but a lot of 400 tons which is to go to Boston does not seem to be subject to this proviso.

The following are prices of pig iron at tidewater for delivery during the first quarter and the first half of 1907, those obtained for earlier shipment being from $1 to $2 per ton higher:

Northern No. 1 Foundry	$20.50 to 21.50
No. 2 Foundry	20.00 to 21.00
No. 2 Plain	19.00 to 20.00
No. 1 Southern Foundry	20.00 to 21.00
No. 2 Southern Foundry	19.50 to 20.50
No. 3 Southern Foundry	19.00 to 20.00
No. 4 Foundry	18.50 to 19.00

Certificates and Foundry Contracts.—Business has been dull throughout the week although prices have hardened. There were no sales of importance. The following are today's quotations for standard foundry contracts:

Standard Foundry Contracts.

	Bid.	Asked.
October	19.25	....
November	19.25	20.00
December	19.25	20.00
January		19.30
February		19.30

Finished Iron and Steel.—No extraordinarily large tonnages have marked the business of the week, but sales have been good in all lines and pressure for delivery on old contracts continues severe. The railroads have as usual been the heaviest purchasers. The Erie railroad bought 38,000 tons of rails; the Interborough-Metropolitan Co., 4,000; the Central Vermont, 3,000; and the electric traction companies and manufacturers of frogs and switches several thousand tons. The contract for 5,000 tons for the Panama canal commission was also awarded last week. Negotiations are pending on a very large tonnage of rails variously estimated to be in the aggregate, from 300,000 to 400,000 tons.

September, although it brought out nothing spectacular, has been a good month in the structural field. The American Bridge Co. booked a little more than 62,000 tons, slightly more than the producing capacity of the mills. No unusual orders have marked the week, the very considerable tonnage being made up of odds and ends of small lots. The Northern Pacific railroad placed a contract for 1,000 tons of steel for bridge work, and there were a number of smaller quantities secured for buildings and bridges. The report concerning the erection of the Pennsylvania railroad terminal in this city which has been going the rounds is somewhat misleading. The Jobson-Hooker Co., of Pittsburg, is to erect the steel which has practically all been delivered by the American Bridge Co. This contract involves the substructure only. The order for the steel to be used above ground was secured some months ago by Milliken Bros., Inc.

Business in plates, sheets and bars has been highly satisfactory. Certain producers have felt justified in advancing the prices of blue annealed sheets $2 per ton. A premium of $2 per ton on steel plates is also obtained by one firm advantageously situated. Among the orders for plates during the week were 60 tons for tanks to be built in the new Plaza hotel. Specifications on iron bars are taxing the ability of the firms in the position to ship supplies. The strike of puddlers which has been hampering the eastern mills is still giving trouble. One mill is making an attempt to resume operations on a large scale.

The following are prices at tidewater: Angles, 3 to 6 inches x ¼ inch and heavier, 1.84½c; beams, 3 to 15 inches, 1.84½c; tees, 3 x ¼ inch and heavier, 1.89½c; plates, carloads, tank, 1.74½c; flange, 1.84½c; marine boiler, 2.41½c; refined iron bars, 1.74½c to 1.84c; soft steel bars, 1.64½c to 1.74½c; sheets, No. 28 black, 2.50c.

Old Materials.—The scrap market has undergone little change during the week, except that consumers seem more reconciled to the advance prices demanded and paid by the dealers. Buying of melting steel for consumption can not be said to have been begun in this territory, but business seems nearer than last week. There is a good demand for all grades of scrap, especially for old car wheels. A sale was reported of 250 tons of cast iron borings for delivery in eastern Pennsylvania. The following are prices approximately f. o. b. tidewater:

Old iron rails	$25.00 to 25.50
Old steel rails, long lengths	16.50 to 17.00
Old steel rails, short pieces	15.50 to 16.00
Relaying rails	25.00 to 26.00
Old car wheels	18.00 to 19.00
Old iron car axles	29.00 to 30.00
Old steel car axles	20.00 to 21.00
Heavy melting steel scrap	16.00 to 17.00
No. 1 railroad wrought scrap	19.00 to 20.00
Iron track scrap	18.00 to 19.00
Wrought pipe	13.50 to 14.00
Cast borings	11.00 to 11.50
Wrought turnings	12.50 to 13.75
Heavy Cast Scrap	16.50 to 17.50

PHILADELPHIA.

Strong Demand Causes Advanced Prices of Pig Iron.

October 2.

Pig Iron.—Prices are rising steadily under the stimulus of an urgent demand that covers not only the remainder of the year, but the first half of 1907 as well. Two causes contribute to this rise, the fact that many consumers have not, despite repeated warnings, covered their future requirements, and the advance in the prices of the raw material of pig iron. The enhanced prices of coke, iron ore

and labor are expected to add at least $2 to the cost of iron in 1907, and, whether the demand eases up a little or not, this added cost of manufacture is not likely to decrease. Furnace men are surprised that so many consumers are still actively buying. These are not the large steel men, but foundrymen and manufacturers, who have refused to believe that they could not buy all the iron they wanted at last July's prices. They are gradually awakening to the fact that there has been a material change in the condition of things, and the orders and inquiries they are sending in make the active and rising market. Prices are still of two kinds, those including premiums for spot or early delivery, and the others for 1907 delivery. Premiums range from $1 to $2 a ton, according to the offers made by buyers, and have in exceptional cases pushed the price of No. 2 X up to $24. As the great bulk of the present sales relates to 1907 deliveries the following prices are based on that date:

No. 1X Foundry	$21.50 to 22.50
No. 2X Foundry	20.50 to 21.75
No. 2 Plain	20.25 to 20.75
Standard Gray Forge	18.00 to 18.50
Basic	19.00 to 19.50
Low Phosphorus	25.00 to 26.00

New Material.—No change is to be noted in the situation, which continues as satisfactory as could be desired. Reports from the mills state that orders for material for pressed steel cars run as far as October, 1908, and it is known that many large orders are still to be placed. Prices show a little change as follows: Beams, channels and angles according to specifications, 1.83½c to 2c; refined iron bars, 1.83½c to 1.88½c; steel bars, 1.78½c to 1.83½c; plates, 1.73½c to 1.83½c.

Old Material.—Active buying by both mills and speculators continues, and even higher prices are predicted for the near future. Quotations are steadily rising and may be quoted as follows:

Old steel rails	$18.50 to 19.00
No. 1 steel scrap	18.50 to 19.00
Old steel axles	22.50 to 23.00
Old iron axles	30.00 to 31.00
Old iron rails	25.00 to 26.00
Old car wheels	20.00 to 21.00
Choice scrap, R. R. No. 1 wrought	22.00 to 22.50
No. 1 yard scrap	20.00 to 20.50
Machinery scrap	18.00 to 18.50
Low phosphorus scrap	22.50 to 23.00
Wrought iron pipe	15.75 to 16.25
No. 1 forge fire scrap	15.50 to 16.00
No. 2 forge fire scrap, ordinary	12.00 to 12.50
Wrought turnings	14.00 to 14.50
Axle turnings, heavy	14.50 to 15.00
Cast borings	11.00 to 11.50
Stove plates	13.75 to 14.25

The United States Steel Corporation has secured an order for 8,000 tons of 70-pound rails for the Philippine Railway Co., 4,000 tons to be shipped immediately.

ST. LOUIS.

Sales of Pig Iron Not Large, But Prices are Firm and Advancing.

October 1.

Pig Iron.—While there were no orders of large tonnage in the market last week, a brisk business was transacted, with a tendency to advance prices on all deliveries. Orders would be much heavier, but there is a decided tendency on the part of furnaces to await developments. Southern producers are sending in reports that their order books are filled and they do not desire business, even for the first quarter. There has been no selling in the local market to justify such claims and it is generally the belief here that southern furnaces are simply optimistic regarding the future and are not overly anxious to close contracts when prices are rising every week.

A scarcity of iron for the last quarter has sent prices up considerably. Nothing can be bought under $16 and if immediate delivery is desired, melters must pay at least $17 and as high as $18.50, Birmingham basis, is reported for iron on track in East St. Louis. This is the highest price noted for the year.

Some iron is being offered for first quarter at $15.50, but standard brands are generally quoted at $16 and $16.50. It is true that no large orders are being booked at these prices, but it shows the position of the furnaces. Iron men predict a scramble when the season advances a little further, but, of course, nothing definite may be ventured upon the present market with certainty. It may be said, however, that prices will not collapse as the demand for iron in all the industries is heavier than it ever was before in this territory.

Iron quotations for the first quarter, including the freight rate to East St. Louis, range as follows:

Southern No. 1	$19.50 to 20.50
Southern No. 2	19.00 to 20.00
Southern No. 3	18.50 to 19.00
Southern No. 4	18.00 to 18.50
Gray Forge	17.50 to 18.00

Coke.—A good volume of coke orders was booked this week at $6.55 to $6.70.

Finished Material.—The contract for the construction of the new water basin at New Orleans has been let to the Black & Laird Construction Co. About 1,100 tons of corrugated bars to reinforce the concrete will be required. A new project of interest is the building of a 16-story skyscraper at Seventh and Olive streets by a client of the Commonwealth Trust Co.

BIRMINGHAM.

Rain Interferes With Furnace Operations.—Prices Firm.

Birmingham, Ala., Oct. 1, 1906.—The Alabama pig iron manufacturers report light selling of their product. This is accounted for by the fact that there is not a great amount of iron to be sold, even for delivery during the first quarter of the coming year. What little spot iron there is to be had in this section is bringing fancy prices. It is stated that some few sales, in small lots, have recently been sold for delivery during the last month of the present year. An estimate has been made of the iron sold for delivery during the first three months of the coming year and it is figured that at least 50 per cent of the probable make has been disposed of already. With three months yet of this year it is believed there will be a demand for the balance of the probable make for the first three months and a great quantity of the output for the second quarter of the month. The production is held down by the raw material supply. During the past week there were incessant rains for three or four days and the railroads suffered from washed out roadbed and bridges and as a consequence the raw material could not be handled as promptly as is needed. The furnaces do not carry more than thirty-six to forty-eight hours' supplies in bins, so that when the rain continued for forty-eight hours and damage was done requiring work on tracks and at mines for a longer period, the interference with iron production can well be imagined. In spite of all this trouble, it is expected that the aggregate output for the month will be large.

No. 2 foundry for delivery during the first three months of the coming year is being sold at from $15 to $15.50 per ton, with some furnace companies reporting $16 as their price. What little spot iron there is to be had, iron to be delivered within sixty days, is bringing $16.50 and $17 per ton.

Considerable attention is still being paid to increasing the production of raw material. The Woodward Iron Co. during the past week began the development of limestone fields in the vicinity of its furnace plant. The Alabama Consolidated Coal & Iron Co. has three new ore mines in operation. The Tennessee Coal, Iron & Railroad Co. will shortly improve the output at its ore mines, while independent ore companies announce that they will be in the market to supply iron making companies with ore.

Reports received from steel plants, the cast iron works, the machine shops and foundries indicate that the month just passed has been a most prosperous one.

Metal Market

NEW YORK.

October 1.

Pig Tin.—Prices have advanced sharply in sympathy with the London market where excitement seemingly due to speculative causes runs high.

The following are today's quotations: Spot and October, 42.50 to 42.75; November, 42.25 to 42.75; December, 42.15 to 42.65. London, £195 and £194 5s. Arrivals for September, 3,597 tons. Afloat, 3,020 tons.

Copper.—The market is strong and prices are rising. Small exports in sight have caused alarm and a feverish market abroad. Today's quotations: Lake, 20 to 20¼; electrolytic, 19⅜ to 20; casting, 19¼ to 19¾; London, £93 for both. Exports for September, 13,531.

Lead.—The market remains steady under a fair demand. Today's quotations: 5.97½c to 6.02½c; St. Louis, 5.85. London, £18 12s 6d.

Spelter.—An easier feeling prevails. Today's quotations: 6.10 to 6.15; St. Louis, 6.10; London, £27 10s.

Antimony.—There has been no change, prices remaining the same.

ST. LOUIS.

October 1.

After the high quotations of the last two weeks spelter took a tumble Wednesday and today it is freely offered at $6.12½, a decline of 12½ cents from last week. One hundred tons were sold Wednesday at $6.15 and Friday 100 tons were sold at $6.12½. Today the market is steady and quiet at the latter price.

Lead suffered a slight decline Thursday when 100 tons sold for $5.80, but today the market is stronger and steady at $5.85, at which price 100 tons were sold here. On Saturday 100 tons of special soft brand were sold for $5.95.

The zinc tonnage shipped during the first nine months of the year aggregates 206,753, an increase of 18,554 from the Missouri-Kansas field. The lead tonnage aggregates 29,149, an increase of 5,963 tons. Prices of both ores continue about the same.

CHICAGO.

October 2.

Spelter which advanced $5 last week, has dropped back $6 this week. Today it is selling at 6.20c to 6.25c for car lots. There are possibilities, however, that higher prices will be asked before many days. All other metals are very firm. Copper has advanced 3c per pound, lake now selling at 22¼c to 22½c, and casting at 22c to 22¼c. For less than car lots, ¼c to ½c higher is asked. Pig tin is also higher, being quoted at 43c Chicago. Lead is slightly weaker, desilverized being offered at 5.97½c to 6c for 50-ton lots. Car lots are 2½c per 100 pounds higher. Sheet zinc remains at $7.75 list, f. o. b. La Salle in car lots of 60-lb. casks. Cookson's and Hallett's antimony, 27c to 28c; other grades down to 23c.

The scrap metal market maintains an active appearance. Demand is good and transactions are numerous. Copper wire has advanced ½ cent; other metals, ¼c.

We quote dealers' buying prices as follows: Copper wire, 17c; heavy copper, 16½c; copper bottoms, 15¾c; copper clips, 16½c; red brass, 15¾c; yellow brass, heavy, 12c; yellow brass borings, 10¾c; red brass borings, 13½c; light brass, 8½c; pipe lead, 5.15c; tea lead, 4¾c; zinc, 4.40c; tin foil, 31c, and pewter, No. 1, 25c.

BRITISH BESSEMER STEEL OUTPUT IN 1906.

Statistics are now available of the Bessemer steel ingot production in Great Britain during the first half of 1906. The total is 919,620 tons, comparing with 1,019,887 tons during the first half of 1905 and with 865,683 in the first half of 1904. Of the 1906 total 634,838 tons were acid steel and 284,782 tons basic steel. A slight decline is also noted in the output of Bessemer steel rails during the first half of the year, the total of 487,184 tons being less by 53,130 tons than the output of the first half of 1905. During the half year 14,773 tons of plates and angles were produced, 82,961 tons of steel bars and 81,745 tons of blooms and billets.

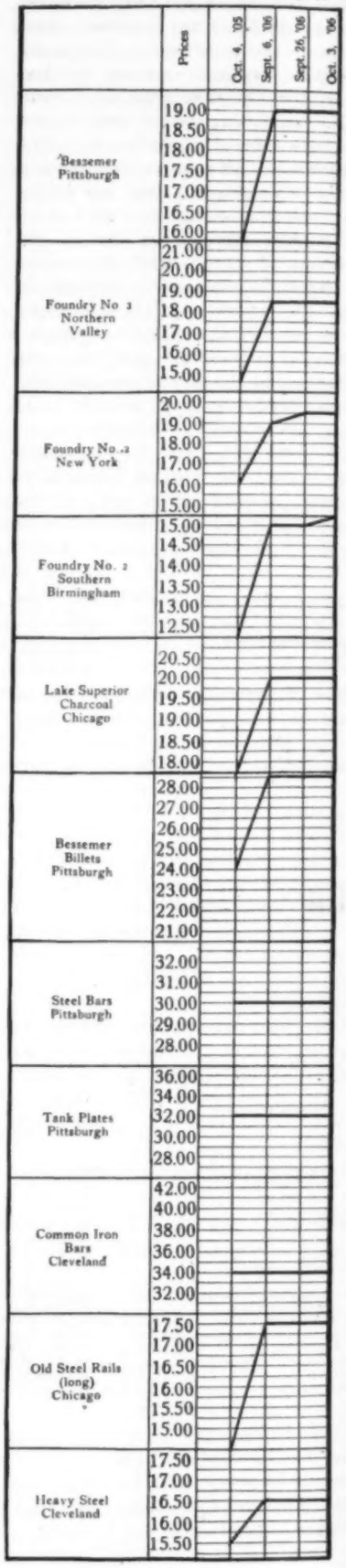
IN THE LABOR FIELD.

The labor situation in the middle west has sustained little change during the past week. The founders' strike at the plant of the Pope Motor Car Co., Toledo, is regarded as ended. Only about 250 machinists were affected when the strike was declared, but within three weeks the National Metal Trades Association had practically that number of men at work. In the Youngstown, O., district the Niles Foundry Co. has signed the $3.30 minimum wage scale for journeymen, but other members of the Youngstown Manufacturers' Club are determined not to pay the advance asked.

Machine Tool Meeting.—The annual meeting of the National Machine Tool Builders' Association, which has been set for New York, Oct. 9 and 10, as previously reported, will be held at the Breslin Hotel, corner Broadway and 29th street.

PRICE CHART.

(Pig Iron Quotations are For Delivery During First Half of 1907)



ORE SHIPMENTS SHOW GAIN.

Office of THE IRON TRADE REVIEW, Duluth, October 3

The figures showing the ore shipments from the docks have just been totaled for the month and indicate that while the hope that 2,000,000 tons would be shipped from the Missabe docks in September has not been fulfilled, a splendid gain was made over the movement during September of last year. The Duluth dock, however, was the only one of the three to ship more in September than in August, and with full capacity of the docks available in October, that month will doubtless show a corresponding increase over September. The statement of the ore shipments in September is as follows:

	Two Harbors.	Duluth.	Superior.	Total.
Sept. 21-30, '06	331,827	536,090	287,577	1,155,494
Sept. 21-30, '05	306,491	413,308	186,130	905,929
Increase	25,336	122,782	101,447	249,565
Sept. 1906	1,167,839	1,732,616	869,678	3,770,133
Sept. 1905	1,005,790	1,185,909	698,752	2,890,451
Increase	162,049	546,707	170,926	879,682
Aug. 1906	1,256,883	1,585,922	906,960	3,749,765
Increase	89,044*	146,694	37,282*	20,368
Total to Oct. 1, 1906	6,289,875	8,251,046	4,448,174	18,989,095
Total to Oct. 1, 1905	6,024,148	6,719,506	3,919,731	16,663,385
Increase	265,727	1,531,540	528,443	2,325,710

*Decrease.

Since early in the year Alexander Maitland has been general manager and his son, A. F. Maitland, has been superintendent of the Brunt mine, operated by the Rhodes Mining Co., and also of the other properties on the Mesabi in which Mr. Rhodes is interested. Both of the Maitlands have just resigned and at present the mines are being looked after by C. H. Lewis of Cleveland. What will be done to fill the vacancies created has not been decided upon as yet. A. F. Maitland is about to undertake some exploratory work near Buhl and Virginia for the Cleveland Exploration Co., representing the interests of W. D. McKeefrey, W. H. Becker and P. H. Lonergan. It is also understood that the Maitlands will develop some properties of their own.

GENERAL ELECTRIC CO. TO EQUIP HUDSON TUNNELS.

The Hudson Companies, builders of the first tunnel to connect Jersey City and New York, has awarded the contract for the electrification of the lines in the twin tunnels to the General Electric Co. Power to operate the system will be generated at a station to be built on the Jersey side on Washington street, between Jersey City and Hoboken. The first equipment will consist of turbine-driven generators of about 25,000 horsepower capacity. The contract calls for two sets of 6,000 kilowatts, each, and two of 3,000 kilowatts capacity. The power generated will be distributed at a voltage of 11,000 to three substations, where the alternating current will be stepped down to 650 volts direct current. The cars will be operated in trains by the multiple-unit control system, each car being equipped with two 100-horsepower motors. Power will be taken from a third rail. The Erie railroad has let the contract for excavating a four-track open cut to eliminate the Bergen Hill tunnel from the passenger lines. The lowest bid was that of the Millard Construction Co., of Philadelphia, $1,500,000, and the agreement calls for completion in July, 1908. The cut will be equipped with four tracks, which will be used for passenger service.

PERSONALS.

Horace Mayhew has resigned as president of the Cape Breton Coal, Iron & Railway Co., owing to ill health.

Charles F. Putnam, president of the Putnam Machine Co., Fitchburg, Mass., has returned from a four months' stay in Europe.

John E. Botterell has been appointed manager of the Winnipeg branch of the Canadian Fairbanks Co., succeeding F. R. Newman, who has resigned.

John O'Brien, of Elwood, Ind., has been appointed superintendent of the Atlanta Tin Plate & Sheet Mill, Atlanta, Ind., succeeding Walter Jones, who resigned.

S. B. Knight, industrial commissioner of the Wabash railroad, has resigned to retire from business, after 32 years of service. He is succeeded by William F. Schmidt.

James L. Sharkey has been made sales manager of the New York office of the General Fireproofing Co., of Youngstown, O., in the department of expanded metal, metal lath, etc.

Patrick, J. McGuire, superintendent at Bessemer for the United States Cast Iron Pipe & Foundry Co., has resigned, and his place has been taken by M. J. Hays, foreman of the casting department.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Co., sailed from New York Sept. 29 for Europe, to be absent about two months.

E. M. Lesser has been placed in charge of the branch office recently established at Milwaukee, Wis., by the Vaughn-Merrow Machine Co., Salem, Mass.

Samuel E. Fetter, formerly with the Union Switch & Signal Co. and the Westinghouse Machine Co., has been placed in charge of the foundries of the Carnegie Technical Schools, Pittsburg.

Captain James Rowe, who for the past eight years has been in charge of the Atlantic mine of the Oliver Iron Mining Co., at Iron Belt, Wis., has resigned to accept the superintendency of the Osceola mine in the copper country.

Charles Henderson has resigned as master mechanic of the American Ship Building Co., at Lorain, to accept a similar position with the Great Lakes Engineering Co. He is succeeded by Joseph Gawn, heretofore foreman.

Louis Block, for 24 years connected with the De La Vergne Machine Co., New York, most of the time at the head of its engineering department, has opened offices as consulting engineer at 45 East Forty-second street, New York.

J. B. Duke, a heavy stockholder of the Republic Iron & Steel Co., and H. S. Black, president of the United States Realty & Construction Co., will, it is stated, be added to the directory board of the Republic company at its next meeting.

Louis Tatum, purchasing agent of the Bullock Electric Mfg. Co., Cincinnati, has resigned to join the Cuttler-Hammer Co., Milwaukee, Wis. Together with Ernest Steinle, cashier of the Bullock Co., Mr. Tatum was recently banqueted by a number of business friends.

John A. McGregor has been made president of the Union Iron Works, San Francisco, filling the vacancy caused by the resignation of Robert Forsythe, former president. George Fredericks, vice president, has also resigned, but his successor has not yet been named. C. N. Champion, formerly assistant treasurer and secretary, has been made secretary and treasurer.

Edward H. Lynde, for several years in charge of the Bessemer steel rail department of the Lackawanna Steel Co., at Scranton, Pa., has been engaged by Robert W. Hunt & Co., Chicago, to assume charge of the departments which were under the immediate direction of the late Albert Fiero. Under the terms of partnership, it is stated, Mr. Fiero's widow and children will continue to enjoy his interest in the business for three years.

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STEEL RAILWAYS.

It is fitting that what is called a railroad in the United States is named an "iron way" in Germany, since the subject of metal ties was discussed in Germany in the sixties, and in 1889, 17 years ago, no less than 9,902 miles of German railroad was laid with iron or steel foundation, two-thirds of this being in longitudinal sleepers and the balance in ordinary cross ties. The longitudinal sleepers almost disappeared, and in 1903 11,534 miles, or more than one-fourth of the through tracks of Germany, were laid with metal cross ties.

In the United States the development of the steel cross tie was slow in beginning, and its progress in the last two or three years can hardly be regarded as rapid.

Indications point to the railroad becoming more and more of an "iron way" in the future. With electricity comes the third rail and its supports. Viaduct work is becoming more and more common, with the necessity of abolishing grade crossings. Signal towers are of steel, and automatic block signaling places the signals closer together. In England, a system of automatic train control has been in successful use in one place, and some such system, as a precaution, may come into vogue.

One cannot watch a standard trunk line for an hour and observe the extreme irregularity in the frequency, speed and load of the passing trains without becoming convinced that the future must find much more constant employment for the rails. Railroad managers are working to this end. A steady stream of traffic would manifold the service obtained from the track, and make economical the spending of large additional sums upon the track in use, rather than the laying of additional tracks, the increase in land values at the large centers encouraging this diversion also. The segregation of tracks for freight and passenger use, respectively, paves the way for greater uniformity in speed and load, thereby permitting greater frequency of trains and correspondingly greater density of traffic.

All this development is increasing the feasibility of spending large sums of money on each mile of track. While of late the question of wooden or metal cross ties has been one of close figuring in the matter of first cost and maintenance, the future will consider the question on the broader lines of utility and permanence.

SOME POINTS IN OUR TRADE WITH CANADA.

Several consular reports of late have taken occasion to note the development among the Canadian people of a spirit of increasing fairness and friendliness toward the United States, declaring that it is proving a far more powerful factor in trade relations than any law placing British products under a preferential tariff. There is evidence in cold facts that this is true: every report of our trade activities furnishes additional proof. Export statistics show, for instance, that during the last fiscal year Canada's purchases of castings in this country were greater by one-fourth than in the previous year; that in electrical machinery a like gain was made, and that in hardware the increase was more than eighteen per cent.

Preferential tariff rates, inaugurated in the hope of adding to British importations, have served only to check the decline during a period of activity in which the United States has made an extremely heavy advance, and the share of the two chief competitors for the Dominion trade now furnishes an astonishing contrast. A Canadian trade paper states that during the past fiscal year the United States furnished bridge and structural iron to the value of $717,165 against $2,119 from the mother country. In plates and sheets the proportion was $712,448 to $189,417; in structural steel $1,244,245 to $240,710; in tubing $978,453 to $137,879; in machinery $4,023,425 to $293,384; and in wire, nails, bolts, tools and kindred lines much the same. To these figures the following comment is appended:

"United States manufacturers have an appreciation of Canadian business, are keenly alive to it and make special endeavors to secure it, while with our friends across the water, enjoying particularly favorable tariff privileges, this has not been true. The nearness of the United States is very much in favor of its goods, and this probably offsets the British preference to some extent. Otherwise the difference seems to lie with the keenness for business and the enterprise in business circles between the competing countries."

With the recital of the preponderance of American trade of the present, the entire story is not told. The American manufacturer has entered the Canadian field to stay; he is looking further ahead than to the commercial possibilities of the immediate future. The recent announcement by a large Coventry firm of its intention to establish branch works in the Dominion has been the basis of wide comment as an unusual departure, leading to the query as to whether it is only an isolated case or the beginning of a general movement. The United States manufacturer, on the other hand, has long been alive to the opportunities in this direction, and many of our leading interests now have their Canadian branch.

This method of gaining and holding the trade of British North America is apparently to be increasingly necessary in the future, as attention has just been called at the annual meeting of the Canadian Manufacturers' Association to the need of such tariff regulation as will force the manufacture of goods on Canadian soil, even if it is by foreign capital. Productive interests of the States are already well prepared for such an innovation, and in this, as well as in the more general adoption at Canadian public functions of the toast "To our cousins across the line," there is a brilliant prospect for a continued and broadening market.

THE CUBAN EXPEDITION. — A NATION'S SHAME.

"Millions for tribute, but not one cent for defense." That seems to be the paraphrase that congress has adopted. About 6,000,000 tons of foreign ships, worth between $400,000,000 and $500,000,000, are employed in doing our foreign carrying. The forests of foreign countries, the ore and coal mines on alien soil, the factories and the mills of foreign countries, the workmen of other nations, are all employed, at the expense of the United States, in building the ocean-going merchant ships required for the carriage of our foreign commerce. So pitiful has become the supply of American ships in the foreign trade, so few are they, and so far apart, that the moment the United States is compelled to send 6,000 troops to Cuba to preserve order, our government must straightway call upon British and German ship owners to help us out by consenting to charter to us British and German steamships.

Recently we were told that the trouble in Cuba has been foreseen for months; that the bureau officers of the different departments concerned were alive to the necessities of the situation; that Gen. Humphrey, in charge of the quartermaster's department of the navy, had every detail made, to the most minute provision. At last the storm bursts! What happens? Today this great nation has one lone American transport on the Atlantic side of the United States—just one. She can carry 800 or 1,000 men. What next? We are informed that the British steamship Marion and the German steamship Andes have each been chartered by the war department for the carriage of American soldiers the less than one hundred miles that divide the United States by water from Cuba.

For the last eighteen months there has been before congress the report of the Congressional Merchant Marine Commission, a body of five senators and five representatives, also the measure prepared by that commission to carry into effect its recommendations. The commission was appointed at the urgent request of President Roosevelt, made in his annual message to congress in December, 1903. In that message he told congress that the American people were, practically speaking, a unit in favor of an American merchant marine; that they were merely divided as to method by which to get it. This is the way the people have been for forty years; only congress has been either unwilling or afraid! It was found, upon very careful investigation, toward the close of the last session of congress, and so announced by the Merchant Marine League, that the moment the bill in question was passed it would result in the placing of orders in American ship yards on the Atlantic alone, for the construction of 75 new American steamships.

Just think of it! Seventy-five new American steamships, of about 400,000 gross tons register, that would cost about $40,000,000 to build. It would increase our foreign going marine nearly 50 per cent; it would increase our steam foreign-going marine 65 per cent. It would fill every available American ship yard with work for a couple of years to come. It would give heart to American capital to invest in American ships for the foreign trade. It would cause an immediate new demand for a very large tonnage of iron ore, to be brought out of the iron mines of America; it would add additional freight to our railroads and steamship lines of the interior to convey timber and iron ore to the mills; it would mean the buying of large quantities of hoisting and conveying machinery, electrical equipment, brass goods, boilers and countless other things used in building and operating ships.

Coal would be mined and converted into coke, to be used with this ore, in the making of the required steel. Transportation agencies in the interior would be called upon to convey the partly finished materials from the mills and factories to the ship yards, there to be assembled into finished ships. Long before the ship yards were reached, thousands of skilled American mechanics would receive employment, at good wages, at the steel making centers, at the wood-finishing centers, of the country, in fashioning the shapes used in the construction of a finished American steamship. "In ship building all trades are united," someone truly said. Here is a case where it was known that, on one side of the continent only, and for one type of vessel only, there was a demand for 75 vessels to cost $40,000,000, the moment congress passed the Merchant Marine Commission's shipping bill. It has been accurately estimated that, from the standing timber in the forests, and the ore and coal in the mines, to the finished ship, 95 per cent of the cost is paid to American labor. Here is a case where at least $38,000,000 would be paid over to American labor, in the forests, the mines, the mills, the factories, the transportation agencies, and in the ship yards, before the 75 new steamships would be finished, and put into commission. To the senate's credit, let it be said that it passed the bill—early in the session—on February 14. But it never came out of the house merchant marine and fisheries' committee. There it lay. There it is today—eighteen months after it was first referred to that committee. So, our seaboard ship yards are idle, their machinery is rusting, their men are walking the streets looking for work in other trades, foreign nations are supplying the materials and alien workmen are building the ships needed for our foreign carrying.

To cap all of this, now that the comparatively trifling necessity is upon us to put a small army of 6,000 men into Cuba, to send it less than one hundred miles from our own shores, we must, first thing, call upon British and German steamship companies in order to secure British and German steamships to help us to get our men to Cuba. "Millions for tribute, but not one cent for defense!" That seems to be the motto of the American congress when dealing with our shipping industry, an industry that is, manifestly, an essential part of the national defense.

COMFORT OF THE CREW

Carefully Considered in Planning the J. H. Sheadle.—The Launching.

The steamer J. H. Sheadle, building for the Cleveland-Cliffs Iron Co., the most extensive operator among the independents in the iron country, was launched from the Ecorse yard of the Great Lakes Engineering Works on Saturday last. The steamer was named by Mrs. Sheadle in honor of her husband, who is secretary of the Cleveland-Cliffs Iron Co. Among those who witnessed the launch was Mr. and Mrs. C. A. Nicola, Mr. and Mrs. A. C. Dustin, Mrs. T. Morris Brown, Miss Bessy Brassington, Mr. Herman A. Kelley, Mr. Horace Andrews, Mr. Frank F. Prentiss, Mr. George A. Rudd, Mr. Charles E. Adams, Mrs. A. W. Foote, Mr. E. T. Lenihan, Mr. G. W. Cottrell and Mr. H. N. Herriman of Cleveland; Mr. A. C. Pessano, Mr. and Mrs. Thomas McGraw, Miss Anne Russel, Miss Marjorie Russel, Mrs. J. C. Hutchins, and Miss Hutchins, Mr. John R. Russel, Mr. George H. Russel, Mr. and Mrs. George Mattsson, Miss Anna Mattsson and Henry Campbell of Detroit.

J. H. Sheadle.

The new steamer is 550 ft. over all, 530 ft. keel, 56 ft. beam and 31 ft. deep. Her engines are triple-expansion with cylinders 23, 37 and 63-in. diameters by 42-inch. stroke, supplied with steam from two Scotch boilers, 15 ft. diameter by 12 ft. long, allowed 175 lbs. pressure. The steamer will probably go into commission early in November and will be commanded by Capt. J. M. Johnson and Thomas Durkin will be her chief engineer. While the Sheadle does not differ structurally from the ordinary type of lake freighter, she presents in the arrangement of her cabins a marked departure. Her deck houses are flush with the deck and not, as in latter-day practice, beneath the deck line. Mr. Sheadle's ideas for the comfort of the crew have found expression in this steamer, as in the Michigan and Ishpeming, which are sister ships. Commodious sitting-rooms both forward and aft have been provided for the crew. These sitting-rooms are furnished with tables and chairs and an excellent working library. In the forward end the books are devoted to navigation, in the after end to care of machinery. A general library is also installed of standard works. Monthly records are kept of books called for by members of the crew, and the library will be amplified as time goes on. Exceptional care has also been bestowed upon the crew's living quarters. They are probably the best to be found upon any lake steamer.

At the conclusion of the launch the launching party was tendered a dinner at the Detroit Club by the ship building company. President Wm. Livingstone of the Lake Carriers' Association, presided as toastmaster. The speakers were Messrs. A. C. Pessano, H. A. Kelley, F. F. Prentiss, C. A. Nicola and George H. Russel.

Steel Tubing Contract.—The Great Lakes Engineering Works, Detroit, has signed a contract to supply the steel tubing for the Michigan Central double-tunnel under the Detroit river. The general contract involves the cost of about $8,000,000, and the steel tubing is one of the largest items. The work will be done at the St. Clair yards beginning next spring, and will not be completel until well in 1908.

Guilty of Taking Rebate.—The Camden Iron Works Co., Philadelphia, Pa., has been found guilty in the United States district court of accepting rebates in connection with the shipment of iron pipe to Winnepeg, Can. The published through rate of 49½ cents a hundred pounds was in effect at the time the shipment was made, but the purchasing company secured a rate of 45 cents through the Mutual Transit Co., operating on the great lakes.

OBITUARY.

Byron E. Huntley, president of the Johnston Harvester Co., died Sept. 28, at Batavia, N. Y., aged 81.

Isaac S. Case, president of the International Boiler Works Co., East Stroudsburg, Pa., died at his home in Tobyhanna, Pa., August 18.

George F. Rugg, for a quarter of a century superintendent of machine shops of the Louisville & Nashville railroad, died recently at Louisville.

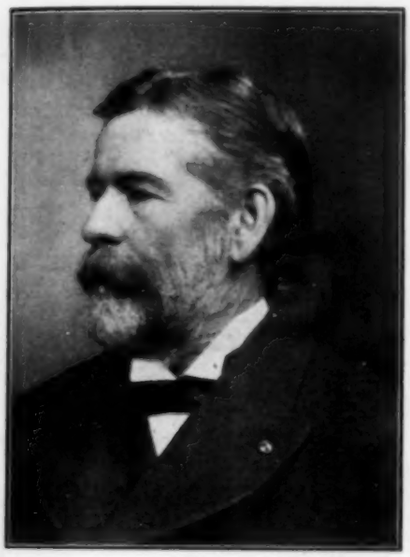
George H. Poor, the inventor of an air-brake very widely used on American railroads, died at Portland, Maine, Friday, Sept. 28, at the age of 61 years.

Edward T. Fairbanks, superintendent of the foundry of the Fairbanks Co., Springfield, O., died suddenly Sept. 28, of heart failure. He was a cousin of Vice President Fairbanks.

James T. Dickson, president for many years of the Dickson Mfg. Co., of Scranton, died at his home in Lackawanna county, Pa., Sept. 25, aged 52 years.

Detroit Meeting of National Supply and Machinery Dealers.

Thirty members of the National Supply & Machinery Dealers' Association, representing chiefly those concerns whose interests are wholly or in large part in the machinery line, were in attendance at the special meeting of that organization held Wednesday, Sept. 26, at the Hotel Cadillac, Detroit, Mich. The call for this gathering was issued at the request of twenty-two machinery concerns which deemed it advisable that certain questions of vital interest to the trade be considered before the meeting of the National Machine Tool Builders' Association in October. This was accomplished in a manner entirely satisfactory to the



E. E. Strong,
President National Supply and Machinery Dealers' Association.

members, and interest was added to the meeting by the presentation of three important papers discussing certain of the problems which are now facing the machine tool dealer. The gathering was purposely devoid of social features, and one day was sufficient for the completion of the program arranged.

Plan of Joint Meeting.

Prior to the regular sessions of the national association, its administrative council was in conference with a similar council of the American Supply & Machinery Manufacturers' Association and with J. A. Reichman, of Memphis, president of the Southern Supply & Machinery Dealers' Association, with the result that practical co-operation in those issues common to the three organizations now seems assured. The southern association and the manufacturers' organization tried the experiment last spring of holding their conventions at the same time and place and found the plan worked out mutually beneficial to both. Questions of interest to both bodies were considered by each association from the standpoint of the other as well as from its own, conference committees served to straighten out many a tangled knot in the deliberations and results were obtained which would have been impossible under the old plan of separate meetings, when decisive action was taken without hearing the other side of the controversy, thus involving later reconsiderations and perhaps called meetings.

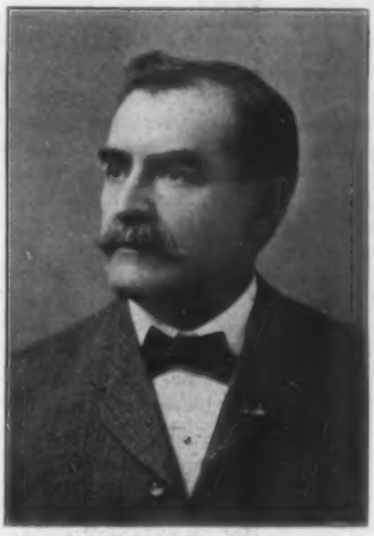
Representatives of the three bodies were present at the Detroit meeting in the hope that the closely related interests of the three organizations might be looked after in such a manner. It is generally recognized that in a number of particulars the methods of selling machinery and supplies in the south differ so radically from those in the north as to defeat any attempt, at least for the present, of merging the two associations of dealers or even of approximating any close relationship. The common interests of the three bodies proved so obvious, however, that it was decided to try the experiment of a triple joint convention. This will be accomplished by the national association extending invitations to the other two organizations to hold their annual meetings at the same time and place as its next meeting, though the three gatherings are to be entirely separate. There is every assurance that these invitations will be accepted.

Machinery Committee Reports.

The National Supply & Machinery Dealers' Association was called to order by President E. E. Strong, of the Strong, Carlisle & Hammond Co., of Cleveland, O. He first referred feelingly to the recent death of Frank Chandler, of the Chandler & Farquhar Co., Boston, a member of the association, and then briefly stated the occasion for the meeting and the circumstances of its call. The principal business of the gathering was then brought up by F. H. Brown, of the Brown & Zortman Machinery Co., Pittsburg, who presented the report of the committee on machinery, reviewing the work of the association from its organization until the present time.

The association has been largely concerned all along with an attempt to secure from the manufacturers of machinery and machine tools three important concessions and arrangements. Of these the closely related problems of "exclusive territory" grants to dealers and of protection in the territory so granted were considered as practically settled some time ago. When it came to putting the solutions into effect, however, it was discovered that the manufacturers had in many cases so fashioned and limited their concessions as to render them unsatisfactory in many particulars, so much so, in fact, as often to defeat their purpose.

It was to correct the short-comings in this direction, as well as to press the stand of the dealers for an increased margin on sales, that Mr. Brown, in company with Henry Prentiss, of the



A. T. Anderson,
Secretary-Treasurer National Supply and Machinery Dealers' Association.

Prentiss Tool & Supply Co., New York, representing the dealers' machinery committee, appeared before the machine tool builders at their Atlantic City convention. Difficulties in the way of exclusive territory and protection therein were largely eliminated, but little was accomplished in the matter of larger commissions.

It was found that to secure any measure of relief, the dealers would have to present their request to the various little groups of manufacturers centering about a special type of tool manufactured. Thus, the lathe men comprise one important special committee of the manufacturers' association, the planer men another and so on through the list of principal machines. The dealers' committee is now prepared to take up the question of prices with these various groups, and in this manner the question

will doubtless be settled. A more satisfactory definition of "exclusive territory" is yet to be secured and certain other clearing methods are sought. The report was widely discussed and a number of points were developed which will prove helpful to the committee in its further campaign. This closed the work of the morning.

Three Interesting Papers.

The paper of Henry Prentiss on "The Increased Cost of Selling Machinery and the Interest of the Manufacturer in a Liberal Policy Toward the Dealer" occupied the early part of the afternoon session, and was enthusiastically received. It is published in full elsewhere in this issue of THE IRON TRADE REVIEW.

Following this paper E. H. Brown discussed the subject of "Exclusive Sales Territory and Protection Therein," to which the association has already devoted much attention. The dealer, he stated, has become a veritable "professor of selling" in the present-day competition for business. To secure the object expressed in the title of his paper, he said, a uniform contract applicable to every machine tool is necessary, and he suggested that the association might well undertake the work of drawing up a model form. He deprecated the practice of tieing up new lines of tools for the sole reason of barring competitors from their sale, declaring the method unjust and fast losing ground. His discussion closed with a number of suggestions as to what a model contract should include.

C. A. Clarke, of Hill, Clarke & Co., Boston, answered the question, "What Can the Manufacturer do to Aid the Dealer in Distributing His Product?" He reviewed a number of methods commonly in vogue and supposed to aid the salesman, but said that most of them were of comparatively little effect. The method invariably successful to a greater extent than any other, he declared, was to make sure that every tool going out of the factory was the best possible tool that could be produced under the circumstances.

The convention arrangements, made by A. T. Anderson, of Cleveland, the secretary-treasurer, were so complete as to expedite matters greatly, and the sessions were completed in time for most of the members to leave for their homes Wednesday evening. The meetings were executive and W. B. Patterson, of the Patterson Tool & Supply Co., Dayton, O., served as chairman of the press committee. The following were in attendance:

MEMBERS.

E. E. Strong, Strong, Carlisle & Hammond Co., Cleveland.
George Puchta, Queen City Supply Co., Cincinnati.
George T. McIntosh, McIntosh Hardware Corporation, Cleveland.
W. M. Pattison, The W. M. Pattison Supply Co., Cleveland.
Henry Prentiss, The Prentiss Tool & Supply Co., New York.
Alfred Marshall, Marshall & Huschart Mchy. Co., Chicago.
Wm. H. Reid, Marshall & Huschart Mchy. Co., Chicago.
C. H. Krueger, Patterson, Gottfried & Hunter, Ltd., New York.
George Vonnegut, Vonnegut Hardware Co., Indianapolis.
O. P. Meckel, Baird Machinery Co., Pittsburg.
J. R. Vandyck, Vandyck-Churchill Co., New York.
Chas. Stahlman, Pacific Tool & Supply Co., San Francisco.
W. J. McDowell, McDowell, Stocker & Co., Chicago.
A. J. Babcock, Manning, Maxwell & Moore, Chicago.
W. E. Shipley, W. E. Shipley Co., Philadelphia.
Chas. A. Strelinger, Chas. A. Strelinger Co., Detroit.
J. O. Harron, Harron, Pickard & McCone, San Francisco.
W. J. Radcliff, E. A. Kinsey Co., Cincinnati.
F. H. Brown, Brown & Zortman Mchy. Co., Pittsburg.
C. N. Hess, W. M. Pattison Supply Co., Cleveland.
W. B. Patterson, Patterson Tool & Supply Co., Dayton.
C. J. O'Hara, C. C. Wormer Mchy. Co., Detroit.
G. E. Merryweather, Motch & Merryweather Mchy. Co., Cleveland.
A. W. Weggelsworth, Hill, Clarke & Co., Chicago.
C. A. Clarke, Hill, Clarke & Co., Chicago.
H. W. Mons, Hill, Clarke & Co., Chicago.
L. J. Hammond, Strong, Carlisle & Hammond Co., Cleveland.
A. Scher, J. W. Wright & Co., St. Louis.
A. T. Anderson, secretary-treasurer, Cleveland.

VISITORS.

J. A. Reichman, president Southern Supply & Machinery Dealers' Association, Memphis.
F. D. Mitchell, secretary-treasurer, American Supply & Machinery Manufacturers' Association, New York.
J. H. Drury, Union Twist Drill Co., Athol, Mass.
Charles F. Aaron, New York Leather Belting Co., New York.
Willard Parker, Pennsylvania Steel Shafting Co., Spring City, Pa.
S. P. Browning, Ohio Valley Pulley Co., Maysville, Ky.
C. D. Wood, T. D. Woods' Sons Co., Chambersburg, Pa.
T. B. Fisher, T. D. Woods' Sons Co., Chambersburg, Pa.
Reuben Kempf, Star Wheel Corundum Co., Ltd., Detroit.
Albert E. Ford, Ford & Kendig, Philadelphia.
Ruluff R. Sterling, Sterling & Skinner Mfg. Co., Detroit.
Frederick G. Skinner, Sterling & Skinner Mfg. Co., Detroit.
Charles G. Smith, The Charles G. Smith Co., Pittsburg.
A. C. Hawkins, T. R. Almond Mfg. Co., Brooklyn.
B. S. Stephenson, THE IRON TRADE REVIEW, Cleveland.
Fred W. Schultz, *The Iron Age*, New York.
Elmer Crawford, *Domestic Engineering*, Chicago.
F. A. Halsey, *American Machinist*, New York.
S. A. McRoberts, *Industrial World*, Pittsburg.

Southern Furnaces.—A representative of a leading pig iron selling house writes THE IRON TRADE REVIEW as follows: "I have before me a list of the southern furnaces in and out of blast on Sept. 15, showing that in Alabama, Georgia and Tennessee a total of 48 furnaces are in blast and 14 out of blast. Of the latter seven are not at all likely to be blown in. It is fair to presume that when some of the others are blown in others belonging to the same companies will be obliged to go out for repairs. The information received by us from the south is that on account of the scarcity of labor and raw materials the output is not likely to increase for months to come."

THE COMING A. F. A. CONVENTION.

A meeting of the executive committee of the American Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, at 2 o'clock Wednesday afternoon, Oct. 3, to discuss the affairs of the association and to make preliminary arrangements for the A. F. A. convention to be held in Philadelphia the latter part of May, 1907. In the evening, several of the officers of the American Foundrymen's Association, including the president, W. H. McFadden, and the secretary, Dr. Richard Moldenke, together with H. M. Lane, secretary of the newly formed Foundry Supply Association, met with the Philadelphia Foundrymen's Association to talk over plans for the convention.

Variety Company Changes.—The Variety Iron & Steel Works Co., which is the successor of the old Variety Iron Works Co., Cleveland, with a paid-up capital of $400,000, has elected the following officers: J. H. Webster, president and treasurer; L. D. Weaning, vice president; F. A. Brodhead Jr., secretary, and E. S. Cook and Paul North, additional directors.

Four Great Cargoes.—Four steamers of the Pittsburg Steamship Co., Oct. 1, delivered in the Calumet river, at South Chicago, a total of 44,850 gross tons of iron ore and established a record for average shipments. The freighters with their cargoes were as follows: Harry Coulby, 10,350 tons; J. Pierpont Morgan, 11,500 tons; G. W. Perkins, 10,500 tons, and W. E. Corey, 12,500 tons.

A Euhling pig machine has been installed by the Republic Iron & Steel Co., at the Haselton furnaces, at Youngstown, O. No. 2 stack in the Haselton group of the Republic furnaces will be started some day this week. No. 3 stack will not be completed until the first of next year. The strike of structural iron workers held back the two new furnaces several months.

The Patterson Tool & Supply Co., of Dayton, O., on account of its growing trade in Indiana, has located its Mr. A. G. Schonacker at 508 E. Twenty-third street, Indianapolis, and from this location is taking excellent care of its Indiana customers

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The new steel mill of the Youngstown Sheet & Tube Co., Youngstown, O., turned out 825 tons of finished bar and billets Thursday, of last week.

THE ENGINEERING WORKS OF MESSRS STOTHERT & PITT, LTD.

By Emile Guarini.

The well known English engineering firm of Stothert & Pitt, Ltd., builder of electric cranes, has recently added a long series of improvements to its works at Newark and to the auxiliary establishment called the Victoria works. Plants which have been added to gradually by taking in adjacent properties just when and where they could be bought up do not usually present an ideal arrangement of the various departments in relation to each other. Nevertheless, Messrs. Stothert & Pitt have overcome these difficulties much better than many other firms which have been faced with them. If their shops are not planned exactly as would be done if they were laid out anew, with no limits as to area, they afford a very good example of what may be accomplished by making use of modern methods and practices in manufacturing.

The entire works is electrically driven, and is equipped with the most up-to-date tools and appliances for taking care of the work that comes into the shop. The motors throughout the works range generally from 10 to 15 horsepower. Drilling, fitting and chipping are carried on by means of pneumatic tools, air being supplied by a motor-driven Ingersoll-Sargeant air compressor, delivering air at a pressure of 100 pounds per square inch.

Steam power at the Newark works is generated by two Lancashire boilers operated at a pressure of 120 pounds per square inch, and capable of evaporating 7,000 pounds of water per hour. These boilers are equipped with Bemis stokers, including the new patent automatic damper arrangement and with Green economizers. Electricity is generated by means of two Bellis-Siemens generating sets, each of 125 kilowatts capacity. In addition, there is a 90-kilowatt set for lighting and testing work. The switchboard was built by Blackwells, London. The power plant also comprises a three-phase testing plant for electric cranes which are tested up to any desired voltage, by means of a booster.

Power for the Victoria works is supplied by a 25-horsepower Marshall engine, steam for which is generated by a set of locomotive type boilers. A Bellis-Newton generating set provides current for lighting, and there is an additional set for testing purposes.

The Victoria works is situated about half a mile distant from the Newark works. The site was acquired originally, in order to provide additional room for carrying out the work in connection with the Gibraltar dock contract. Since then, however, the firm has found more than enough work to keep its auxiliary plant running, and it has consequently now become quite a part of the regular establishment. These works are in direct communication with the Mid-

Boiler Shop, Engineering Works of Messrs. Stothert & Pitt, Ltd.

land railway system, by means of a siding and also in touch with the Newark works, by river.

The Newark works are admirably situated, in so far as the transportation of raw material and finished work is concerned. The river Avon runs across the bottom of the yard, while on the other side is the main line of the Great Western railroad. When road haulage is necessary, a five-ton Straker steam larry with trailer is used. Regular communication is maintained between the old and the new works by means of this larry.

A great deal of constructive work is carried on out of doors at the Newark works, and most of it takes place in what is known as the No. 1 working yard. This yard is served by a seven-ton steam locomotive crane, and several other cranes. At one end of the yard are extensive racks for the storage of bar iron, an electrically driven cold saw being placed in a convenient position for cutting this material into the required lengths before taking it into the shops.

The amount of wood work carried on at this plant is no inconsiderable item, including as it does portable offices and cabins. This is carried on in a large carpenter and joiner shop, which is equipped with the most modern electrically driven wood working tools, the most of which were built by Sagar. Above the carpenter shop is the pattern shop, the pattern storage adjoining the building which houses the wood working shops. The firm executes all its forging work, excepting that of the heaviest character. Therefore, a fairly large blacksmith shop is maintained. This is equipped with three massive steam hammers, bolt and nut making machinery, etc. Electric power is the rule in the forge shop, as elsewhere.

The foundry is divided into two bays, the larger of the two being served by a 15-ton overhead electric crane, and a five-ton electric pillar crane placed in a convenient position. Three Stewart "rapid" cupolas are installed with an aggregate capacity of 20 tons per day. The raw material is raised from the ground to the charging platform by an electric elevator. The light bay is served by two five-ton overhead electric traveling cranes. In this bay are installed three Darling & Sellers plate molding machines, which are doing efficient work. An excellent system of drying has been adopted, anthracite and air blast being employed instead of the usual coke fire.

Wheel molding represents a large proportion of the work in this department, three machines being available for this purpose. The largest of these is a Whittaker; the second size machine was built by Scott and the third was designed and built in the firm's own shops. The usual blowers, pug mills, rumblers and sand mixers, all driven by independent motors, are installed. A new brass foundry arranged upon the most modern lines

FORGE SHOP, ENGINEERING WORKS OF MESSRS. STOTHERT & PITT, LTD.

is under construction as an auxiliary to the foundry department.

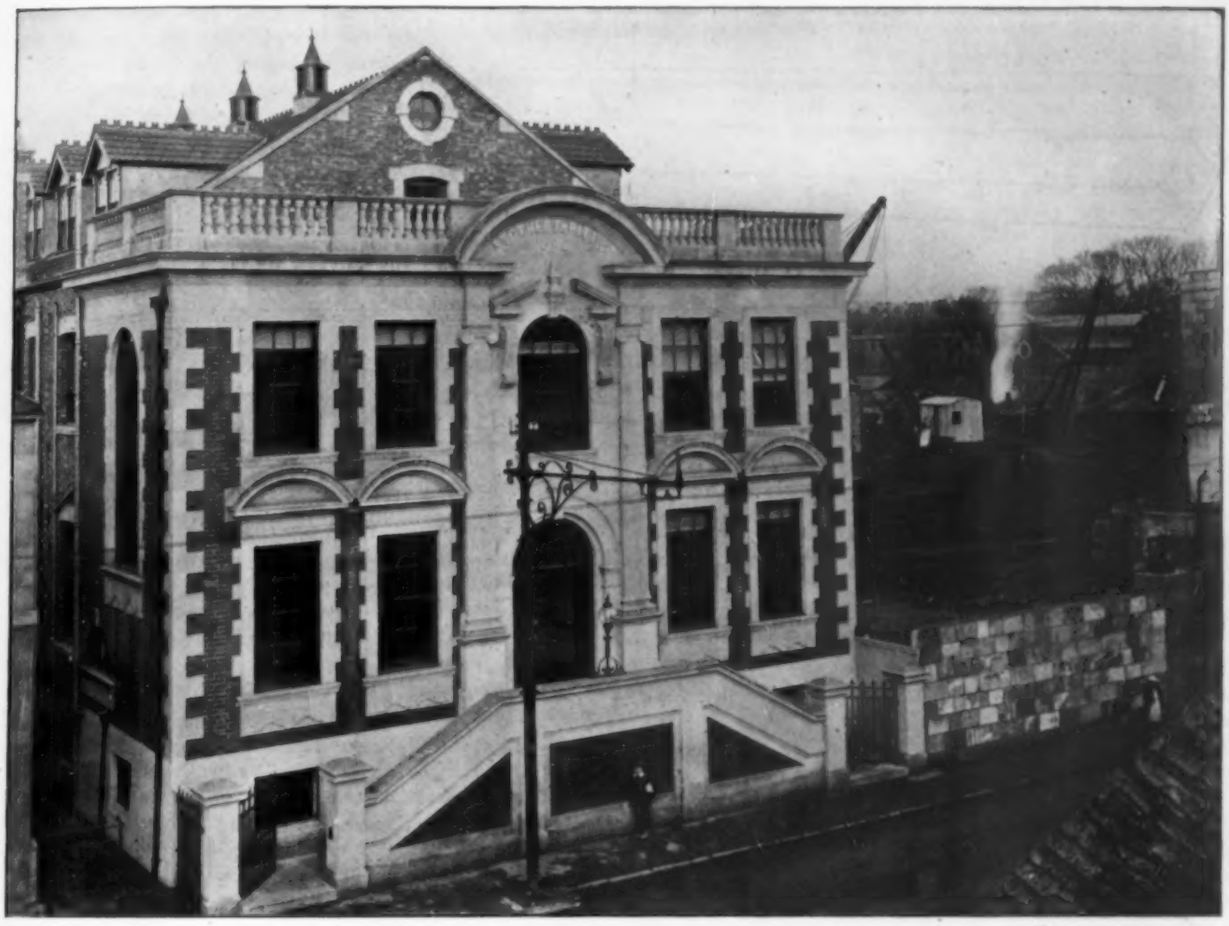
One of the principal departments of the plant is the No. 1 erecting shop. In this shop is installed a 20 x 10 x 6-foot milling machine, built by Hetheringtons. This machine was especially installed some time since for dealing with the sluice work, penstocks, etc., for the Gibraltar dock contract, heretofore mentioned. The magnitude of this contract may be, to some extent, comprehended when it is known that it required 37 tons of gun metal alone.

Another important building is the No. 1 machine shop, which is a fairly extensive section of the establishment, and is divided into three bays with the tools appropriately grouped in each. One section, for instance, is devoted entirely to the cutting of spur gears for crane work. Several Darling & Sellers gear cutting machines are used for this purpose, as is also a Gleason bevel gear planer. High speed steel has been adopted throughout this shop for cutting tools. Another section of the shop is set apart for boring operations, three of the principal vertical machines used for this purpose being built, respectively, by Hetheringtons, Richards and the Niles company. There is also a horizontal boring machine installed, which was built by the latter firm. In this same department are two large radial drills, built by Hetheringtons.

After passing through the machine shop, the various parts of the cranes are sent in to the stores, from whence they are withdrawn when required by the erecting department. The general stores not only for parts, etc., but also for material, are appropriately situated, as nearly as possible, in the center of the works. Above them, with equal appropriateness, is the tool room, in which all tools, gauges, milling cutters, etc., are made, repaired and issued to the workmen, as required. Messenger boys are employed in the tool room service, a machine operator sending for one of these boys, by means of an electric bell when a tool is required, it thus being unnecessary for him to leave his machine.

A gallery above the No. 1 machine shop is utilized for the light work, and is equipped with a Herbert No. 7 combined turret and capstan lathe, representing the very latest development in this class of machine. Nearby, are several Bullard vertical boring mills of the lighter class. A number of other interesting tools are installed in this gallery, among which are a range of eight-inch center lathes, built by the Clark Machine Tool Co. Light brass work comes within the scope of this department and also millwrighting, for which a special staff is maintained. The grinding shop adjoins this department, and maintains a full equipment of disc grinders, saw sharpening tools, etc.

The Victoria works includes a roomy machine shop, driven by a Crossley gas engine. Most of the work dealing with stock size cranes is conducted in this shop. The output consists largely of nuts, bolts and other small parts, which go into the stores when finished, and from whence they can be immediately



OFFICE OF ENGINEERING WORKS OF MESSRS. STOTHERT & PITT, LTD.

withdrawn by the erecting department, upon receipt of an order for a standard type of crane. Nearby are the boiler shops and erecting departments. The central portion of the yard is served by a 40-foot span, Goliath crane, leaving a clear way underneath of 50 feet. On each side are crane roads for seven-ton and five-ton steam locomotive cranes. In addition, there is a 15-ton steam derrick, with a 70-foot jib dealing with high work. The boiler shop is equipped with Berry's hydraulic plant and De Bergue plate edge planers and pneumatic tools for chipping, drilling and caulking. Nearby, is the mould loft and marking-off board for plotting out details of work to full size.

A separate building is used for the main offices: On the first floor are the general offices, stenography and estimating department; the upper floor is devoted to the drafting room and board room.

The foreign commerce of the United States has crossed the $3,000,000,000-line. In the 12 months ending with August, the imports were $1,254,399,735 and the exports $1,759,417,898, a total for the twelve months of $3,013,817,633.

A NEW FORM OF THE GRISWOLD STEEL TIE.

The Griswold steel tie, described in THE IRON TRADE REVIEW of Sept. 7, 1905, comprised a steel plate with a vertical web in one piece. The inventor of this tie, Joseph Griswold, Detroit, has recently patented another form of steel tie which is shown in the accompanying illustrations. It is composed of two plates of steel, cut as shown in Fig. 1. These plates are of uniform length, thickness, width and weight, and are bent on the dotted lines to assume the form shown in Fig. 2. The parts 2 and 3 are bent down, while the parts 6 and 7 are bent up at right angles to the base. The two lugs 5 are bent inward at right angles to the piece 3, enabling the two portions of the tie to be bolted together, as shown in Fig. 2. The spaces 8 are cut in the vertical web for the reception of the flange of the rail.

The ties are given this form for cheapness of construction and convenience in adjustment when the several parts and the rails are brought together. The upper projections face each other as the center rib of the tie, and the slots in addition to receiving the flanges and webs of the rails, accommodate the strengthening bar, Fig. 3, and the locking block, Fig. 4. The strengthening bar is engaged by four ties adjacent to the rail joints, being shown at 14 in Fig. 5. It is provided with side braces to enclose the ends of the rails, these braces occupying the space between the upright projections of the two central ties and resting upon their parallels. If so desired, they can enclose fish plates extending the same length.

The locking block is designed to force the flange and the web of the rail into close contact with the walls of the slot, and is held in place by bolts through its projections and the upright rib of the tie, these bolts passing through the holes 11, Figs. 1 and 2. The tongue of the locking block is slightly beveled and extends under the strengthening bar and rails of the two ties adjacent to the rail joints, giving added strength at that point.

The claims made for this tie are that it ensures a perfect grip of the tie to the rail without spikes or bolts and nuts. The walls of the slots secure a perfect gauge and prevent all spreading of the track or canting of the rails. The lower projections of the tie encase a part of the ballast, making it a part of the tie itself and thus more securely holding the track in line. The side projections give strength at the central fulcrum point, providing a stiffness that eliminates lateral flexibility and secures a level track. Another advantage claimed is that, similiar to the steel rail, it may be made lighter or heavier, as the requirements of the service demand.

In addition to the foregoing advantages, it possesses the general advantages of the steel tie, in that whatever the first cost, a steel tie, in a series of years, is much cheaper than a wood tie, lasting four or five times as long. The maintenance of the track with a steel tie is much less than that with a wood tie.

Another device recently patented by

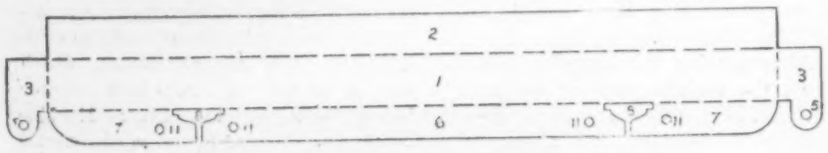


FIG. 1.—BLANK FOR GRISWOLD STEEL TIE.

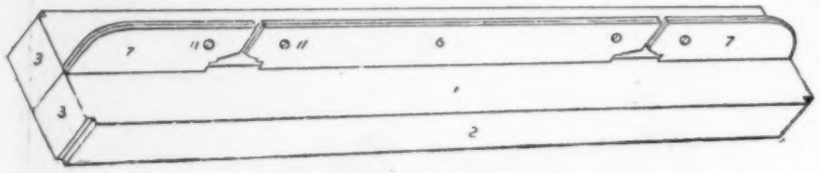


FIG. 2.—GRISWOLD STEEL TIE.

FIG. 3.—STRENGTHENING BAR.

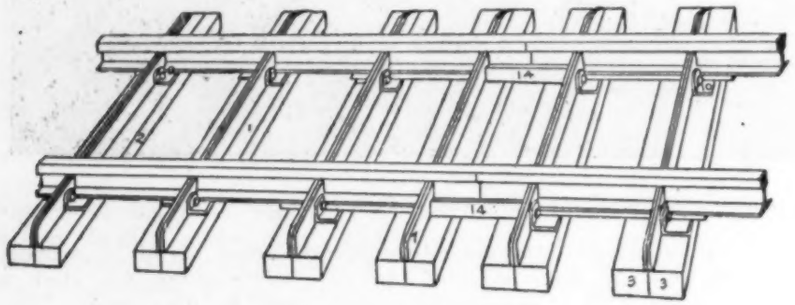


FIG. 5.—SECTION OF TRACK WITH GRISWOLD TIES.

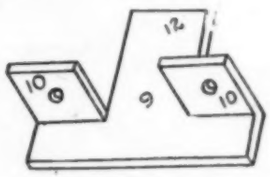


FIG. 4.—LOCKING BLOCK.

the same inventor is shown in Figs. 6-8. It embraces the feature of tie and rail connection and rail joint support. Fig. 6 is a steel plate turned down at the ends and slotted to receive the projections of a vertical steel

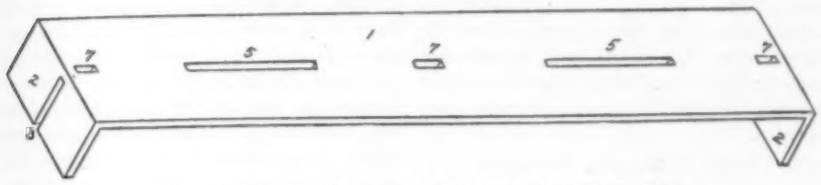


FIG. 6.—BASE OF GRISWOLD TIE WITH SEPARATE WEB.

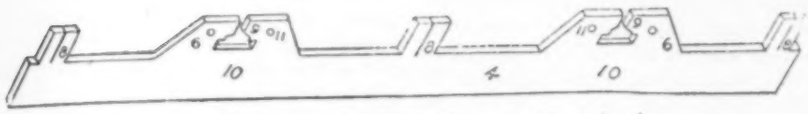


FIG. 7.—REMOVABLE WEB OF GRISWOLD TIE.

rib, Fig. 7, from the under side of the plate. The three projections 8 are split and bent in opposite directions to hold the rib in conjunction with the plate, as shown in Fig. 8. The strengthening plate is put under the rail and engages the projection 6, Fig. 7, as shown in Fig. 8.

A still further combination is shown

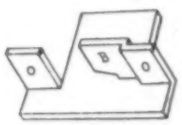


FIG. 9.—LOCKING BLOCK FOR MODIFIED TIE.

in Fig. 10. The slots in the tie, Fig. 2, are cut wide enough to enable the rails to be dropped therein, the rails then being pushed into contact with the opposite walls of the slots. The locking piece, shown in Fig. 9, fits in-

FIG. 10.—MODIFIED STEEL TIE.

to the lower spaces A of the slots, the upright projection B of the locking piece, corresponding to the upright rib of the tie, engages the inside flanges and web of the rail. When brought into position, this projection is in line with the upper rib of the tie and is held there by bolts, as in Fig. 5. By the removal of this locking piece, a rail or tie can be removed from the track with but slight inconvenience.

WISCONSIN ENGINE COMPANY EXTENSIONS.

The Wisconsin Engine Co., Corliss, Wis., is making extensive additions to its foundry and machine shop capacity, and is building a new store room 30 x 80 feet. Prices are now being obtained on the following equipment: One 16-foot boring mill, the center

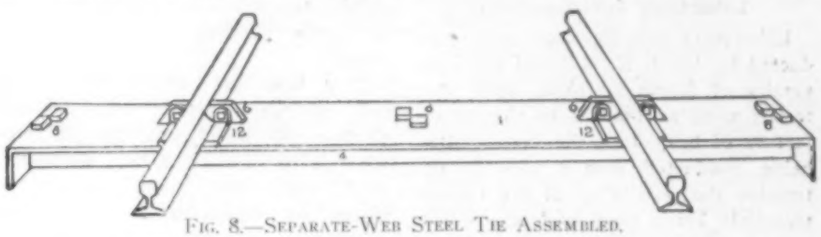


FIG. 8.—SEPARATE-WEB STEEL TIE ASSEMBLED.

spindle to have traveling head to be used for machining and boring large Corliss engine castings (this machine is to be of the heaviest type built); one heavy boring and drilling machine with extension bed plate and out-bored boring. The boring bar to be 4 inches to 6½ inches in diameter; two 36 inch turret lathes; one 24 inch shaper; one milling machine; two dry grinding machines, a small centering machine, and one 30-ton, 4-motor, traveling crane having a five-ton auxiliary hoist, the main crane to be equipped for outside work having the trolley covered. The company has lately bought from the Laidlaw-Dunn-Gordon Co., Cincinnati, O., a duplex, two-stage air compressor, which will be driven by a 70-horsepower Westinghouse type "S" motor, having variable speed; and within the next thirty days it expects to close for the air tool equipment to be used in connection with this compressor. A contract has also been awarded to the Sturtevant Co., Boston, Mass., for one of its positive pressure blowers to furnish blast for the new 15-ton cupola that has been installed in the foundry. This blower will be driven by a Sturtevant direct-current motor.

Among the recent orders received for engines, which the Wisconsin Engine Co. has closed, are the following: Three cross compound engines for the Bethlehem Steel Co., direct connected to 1,000-kilowatt alternating current, General Electric generators; three cross compound engines for the Tennessee Coal, Iron & R. R. Co., direct-connected to 600 kilowatt Westinghouse generators; three cross compound engines for the Northwestern States Portland Cement Co., for their new cement mill at Mason City, Ia., to be direct-connected to 1,000 kilowatt alternating current General Electric generators; a large engine for the Rankin (Pa.) works of the American Steel & Wire Co.; a large tandem engine for the 30-inch billet mill at the Donora works of the Carnegie Steel Co.; a large simple engine, 30 x 48 inches, for the Elyria Iron & Steel Co., Elyria, Ohio; two engines for the city of Columbia, Mo.; these to be equipped with the Wisconsin Engine Co.'s new high-speed Corliss releasing air valve; a 20,000,000-gallon tank and flywheel, triple expansion pumping engine for the city of Milwaukee; one simple engine direct-connected to a 225-kilowatt direct-current generator for the Iron City Sanitary Co., Zelienople, Pa., which is to operate at a speed of 150 revolutions per minute; and a large tandem engine for the American Locomotive Works, Dunkirk, N. Y.

The Joplin Mfg. Co., which was recently organized to manufacture stoves, took off its first heat last week.

Briquetting Tests of the Fuel Testing Plant of the United States Geological Survey.

The United States Geological Survey conducted a number of tests on the briquetting of fuel at its fuel testing plant, St. Louis. The results of these tests are summarized in a preliminary report recently issued.

The briquette machine used during the larger part of the testing work during 1905 was built by Wm. Johnson & Sons, Leeds, England. The briquettes made on this machine at first were 4½ x 6¾ x 5½ inches and had an average weight of 6.8 pounds. The machine was subsequently changed in order to obtain a briquette which would more nearly fulfill the requirements of domestic use and of stationary and locomotive boiler practice, and a briquette 2½ inches in thickness was manufactured, the other dimensions remaining the same. These briquettes weighed about 3½ pounds and were used in the tests discussed below:

Laboratory Investigations.

Laboratory investigations were conducted by Dr. J. E. Mills, of the University of North Carolina, upon materials used as binders in the manufacture of briquettes, the investigation being conducted with a view to determine the possibility of the various materials being used with the different varieties of bituminous coal and as to the perecentage of each binder yielding the best results with the coal.

The binders may be divided into two general classes—inorganic and organic. The former comprised clay, lime, magnesia, magnesia cement (magnesium oxide and magnesium chloride), plaster of Paris, Portland cement, natural cement, slag cement and water glass. The organic binders consisted of wood products, sugar factory residues, starch, slaughter house refuse, tars and pitches from coal, natural asphalts and petroleum products.

The investigations related not only to the nature and amount of the binder necessary for making satisfactory briquettes with each of the several coals, but also to the extent to which the binding quality of certain of these materials might be improved by the admixture of another binding material or variety of coal.

Twenty grams of each coal to be tested were weighed out and mixed with the different percentages of the binding material anl placed in a Battersea crucible. A small amount of water was left in the coal. The mixture while still hot was pressed in a small laboratory hand press, on which a pressure of 3,500 to 4,000 pounds per square inch was obtained. Each briquette weighed, approximately, five grams.

Tests of Binding Materials.

The use of inorganic binding materials, such as those mentioned above, is not likely to prove practicable under any ordinary conditions, except that in the case of non-coking coals when coking coals could not be obtained to mix with them, a small percentage of these materials, as magnesium oxide or carbonate, plaster of Paris, etc., if added to other binding materials may cause the briquettes to hold together better in the fire and hence undergo come complete combustion. Of the more specific results in the testing of different binding materials, the following statements may be made pending future investigations.

Clay, lime and cements as binding materials were entirely unsatisfactory, as they add largely to the ash constituent of the briquete. Briquettes made with these materials went to pieces on exposure to water and weather. Their waterproofing by soaking in oils, etc., is difficult and expensive. Water glass (soda silicate) also proved unsatisfactory. From four to six per cent of magnesium oxide was found to hold the briquettes together satisfactorily in dry weather and in the fire, but they disintegrate on exposure to rainy weather or when immersed in water. Plaster of Paris used in quantities of from two to 12 per cent as a binder made the briquettes hard and brittle. They quickly disintegrated, however, on exposure to moisture. Three per cent of magnesia mixed with six to eight per cent of water-gas tar pitch made a stronger briquette than the same percentage of pitch used alone. The improvement in the quality of the briquette is not considered sufficient to cover the additional cost of the magnesia and the additional percentage of ash which it brings into the briquette. Furthermore, the addition of sulphur to the coal is undesirable.

None of the sugar factory residues which were tested, namely, beet pulp, lime cake, beet-sugar molasses and cane-sugar molasses were satisfactory, as briquettes made with them disintegrated on exposure to the weather and no inexpensive waterproofing has, as yet, proved satisfactory on a commercial scale. Likewise, the wood products, including rosin, pitch, pinewood tar, hard-wood tar, Douglas-fir tar, wood pulp, and sulphite liquor from paper mills proved unsatisfactory when used alone, although some of these materials in combination with other binders gave results indicating the desirability of further investigation.

The test made in which 0.5 to three per cent of starch was used as a binding material with different coals gave briquettes which were strong, burned smokelessly and held together in the fire until completely consumed. These briquettes, however, went to pieces when wet or exposed to the weather for a considerable time. Experiments as to the possibilty of cheaply waterproofing the briquettes with starch binder were sufficiently successful to warrant investigation in this direction. Starch is obtainable in large quantities and can easily be produced in almost any part of the country. In its crude form, it can probably be obtained at a price less than $20 per ton, in which case the use of one per cent of starch as a binder would add only 20 cents per ton to the cost of the briquettes.

Slaughter house refuse proved unsatisfactory for a number of reasons.

Results With Coal Tars and Pitch.

Coal tars and the different grades of pitch made from these tars gave indications of being the most satisfactory binders for the manufacture of briquettes. These can probably be made at such a price as will bring the cost of the binding material to not more than 75 cents per ton of briquettes. Briquettes made from the majority of the bituminous coals with a good grade of pitch as a binder will bear ordinary handling, will stand exposure to the weather for a number of years without deterioration and will burn well in the fire. It was found to be better to mix with a non-coking coal 10 to 20 per cent of a coking coal, rather than increase the percentage of pitch.

In the investigation of the asphalts as binding materials, impsonite from Indian territory was found to be rather satisfactory. In a number of tests,

however, with non-coking coals, the result was improved by the addition of from five to ten per cent of impsonite, in addition to from three to five per cent of ordinary pitch. Gilsonite and other asphalts from Utah used in quantities to from four to eight per cent gave fairly satisfactory results. Experiments were made with several other asphaltic materials, and while the results warranted further investigation, they were not altogether satisfactory. Asphaltic tar yielded fairly good results as a waterproofing material in briquettes made with starch. Experiments with from four to six per cent of maltha (a liquid asphalt) used as a binder yielded fairly satisfactory results with coking coals, but with non-coking coals, it was found to be insufficient for the purpose.

Results With Petroleum Products.

Crude petroleums were tested as binding materials with satisfactory results. The asphaltic petroleums were used successfully in waterproofing briquettes made with a starch binder. It is doubtful, however, whether this practice would prove satisfactory commercially. The success of the waterproofing was fairly proportional to the amount of asphaltic material in the petroleum. As a binding material, asphaltic petroleum proved even more successful than when used for waterproofing purposes, from six to eight per cent being entirely satisfactory. The petroleum residuums proved to be successful binding materials somewhat in proportion as the percentage of asphalt in them increased.

Water-gas tar, which is obtained from illuminating gas plants was not tested sufficiently to give satisfactory results. It is believed that this material can be used as a binder if properly mixed with other somewhat similar materials. It is necessary, after this material is mixed with coal, that the mixture should be raised to a sufficiently high temperature to liquefy and perhaps even to vaporize the tar. The cost of this binder would be from 45 to 65 cents per ton of briquettes.

Tests were also made with acid sludge. Asphalt tar and Pintsch-gas tar proved generally unsatisfactory. Asphalt tar, when used for waterproofing with starch or other material as a binder, is fairly satisfactory.

Requisites for Binding Materials.

In the making of coal briquettes, the binding work is best performed when the particles of coal are coated and the void spaces are filled with binding material. This is best accomplished when the temperature of the mixture before compression is raised sufficiently to liquefy or vaporize the binder. The relation between the coal and the binder seems to be physical rather than chemical.

The amount of binding material necessary depends, therefore, on the aggregate of the surfaces of the coal particles to be coated, on the spaces to be filled and on the general physical and chemical character of the coal. Coking coals require less binder than non-coking coals, and the percentage of binder necessary for the latter coals may, in many cases, be diminished. The quality of the briquette was otherwise improved by the previous admixture with them of 10 to 20 per cent of some coking coal.

The more important requisites of a suitable binding material for briquettes are as follows:

(1) It must be inexpensive because of the small difference in the United States between the prices of slack or fine coal and those of lump coal. (2) It should be capable of abundant production in different parts of the country to avoid the necessity of long transportation. (3) It should be of such character as to make it easily handled and applicable at working temperatures. Is used in solid condition, as in the case of pitch, the melting point should not be lower than the temperature of hot summer days nor ordinarily above that of live steam. (4) It should hold the briquette together strongly, not only during ordinary handling and transportation, but also during protracted exposure to weather and while burning. Certain materials, like starch and molasses, yield fairly satisfactory results, as long as the briquettes are kept dry and during their consumption by fire; but as these materials are soluble in water; the briquettes go to pieces under the action of water, unless rendered waterproof by the application of other substances. (5) The binder should not add appreciably to the ash of the coal, nor increase the clinker formation in the ash. It should not give off fumes nor seriously increase the smoke in burning the briquettes. (6) The binding material should increase, or certainly should not decrease, the heating quality of the coal which is used in the manufacture of briquettes.

General Conclusions.

The successful development of a coal-briquetting industry in the United States will depend upon a number of conditions, some of which are variable.

The condition which more than any other has prevented the development of such an industry in this country is the low price of bituminous coal, especially the small difference between the price of lump coal and that of slack and fine coal. Perhaps in no country has specialized equipment for burning fine coal been carried so far as it has in the United States, but the results of a number of tests seem to indicate that with the non-coking coals, the use of the finely powdered coal, even in the modern furnace, is a disadvantage rather than a gain, for the reason that this fine material sifts through on to the grates and is ultimately lost in the ashes, meanwhile, preventing a full draft which is essential to rapid and complete combustion. This is, therefore, one class of material which should be separated from the coarser coals and made into briquettes, providing the price at which these briquettes can be sold is sufficient to more than cover the cost of manufacture.

With anthracite and semi-anthracite, the difference between the price of lump and that of slack is often more than sufficient to cover the cost of manufacturing briquettes. In such cases, there can be no question as to the possibility of establishing a briquetting industry, as soon as the proper binding material and briquetting equipment can be provided. Unfortunately, the high cost of the pitch, which is generally used as a binding material, is one of the barriers now existing in the development of this industry. The most favorable outlook for the development of the industry in the United States is in connection with the use of briquettes in locomotives and in domestic furnaces and stoves. It can hardly be expected that, at anything approximating existing prices, briquettes can be manufactured for successful use in the ordinary power plant furnaces of this country.

In connection with the use of briquettes, the following advantages are claimed: They burn with a higher efficiency and with less smoke than coal, because they allow a better circulation of air, and the combustion is more complete and uniform. They are cleaner and there is less waste in their use. They burn with more flame (owing to the added combustible binding material) and at higher temperatures. They occupy less space than does lump coal, the difference being from five to 20 per cent. They stand handling and exposure to the weather better than lump coal. In their storage, there is no risk of spontaneous combustion.

A brief statement of some of the requisites of a briquette intended for general use is as follows:

The cost should be but little, of any, in excess of that of lump coal of the same kind as that from which the briquette is made. The strength and binding material must be such that it will bear handling and railway transportation without serious loss from crumbling and that it will also stand exposure to the weather without serious deterioration and also retain its shape in the fire. Its density should at least equal that of the lump coal for the same mine. Its ash should not exceed that of the best lump coal from the same mine. Whenever the conditions are favorable the percentage of ash should be reduced by washing the fine coal preliminary to its use in briquette manufacture.

NEW HAVEN IRON AND STEEL CO. REPORT.

The annual report of the New Haven Iron & Steel Co., Philadelphia, for the year ending Aug. 31, has been made public. The operating account is as follows:

	1906.	1905.
Gross sales	$595,113	$568,670
Net profits	25,715	26,700
Dividends		15,000
Accts. chgd. off ..	3,187	315
Surplus	22,528	11,385

In the course of his report President C. C. Kauffman says: "The fiscal year of the company was satisfactory and profitable. The treasurer's report, which is made a part of this annual report, shows that our quick assets, including cash, marketable securities, accounts and bills receivable, together with finished and unfinished iron and salable material on hand, August 31, 1906, amounted to $244,449. Our current indebtedness, at the same date, was $3,891. Our surplus is $119,765. This is for ten months' operation, as for the last sixty days the mills were not operated, on account of the employes being on a strike for higher wages. The future prospects of the company are very gratifying. The physical condition of our property was never better."

The Geo. V. Cresson Co., Philadelphia, has issued an exceedingly attractive catalog describing power transmission machinery, and especially pulleys. The catalog comprises about 75 pages, and lists a large variety of pulleys, couplings, clutches, cone pulleys, etc. It is printed in two colors and contains considerable useful information relating to power transmission machinery.

PRACTICABILITY AND LIFE OF METAL CROSS TIES FOR RAILROAD TRACK CONSTRUCTION.[1]

By H. T. Porter.[2]

I have not been able to prepare an article on as broad lines as the title calls for, but have only endeavored to present in a simple way the experience of the writer with metal cross ties.

There is an ever pressing demand for the reduction of cost and an increase in speed and safety of transportation. It is causing, from year to year, radical changes in the character of equipment and of the roads on which the equipment runs. For the improvement of the roads, grades are being reduced, curves are being lightened, or eliminated, and in every practicable way the roadbed and track are being made more substantial. In order to provide a more stable support for the track, they are providing wider and better drained roadbeds.

To secure a ballast of better supporting power, crushed rock of various kinds and of various sizes, gravel with various percentages of sand, and other natural and artificial ballast material are being tested. To distribute the load and lower the unit of pressure on the ballast, rails of larger section are continually replacing those of smaller section.

Why is this? Because within the last 25 years the load per axle of car has increased from 12,000 to 36,000 pounds, of locomotives from 20,000 to 60,000 pounds, and in a few cases the axle load of cars has reached a much higher figure. This increase in load, together with the increase in speed, has increased the demands upon the track from four to five times.

In the construction of the road, you note the improvement of the roadbed by making it wider and more stable by careful drainage, of the ballast by the use of better quality of selected material, of the rail by the use of larger sections. Has there been any such corresponding improvement in ties? I believe that any observer of new construction in the eastern section of this country will note that quite a percentage of ties are now being used which would have been rejected a few years ago as not being up to specifications either as to quality or size. This, as is well understood, is due to the rapidly diminishing quantity of available tie timber, and a corresponding increase in the use of ties. The short life of wood and the limited conditions under which it can be used have led to the use of steel in bridges. For similar reasons steel freight cars are taking the place of wooden freight cars as fast as the car companies can produce them. The era of steel coach equipment is rapidly opening, and it is the opinion of many that the substitution of steel passenger equipment may soon attain the same rate of progress as that of freight equipment.

You will note that the improvement in track has been in the roadbed and ballast under the ties, and in the rail over the ties, whereas the character of the ties is either no better or worse than it was years ago, when the work of the track was only about one-fourth of what it is now. The necessity for an improvement in the ties is undisputed, and the only question is, what direction shall it take? Shall the improvement come as it has done in bridges and in freight and passenger equipment, by the use of steel? As bearing on this question, the writer will try in a simple way to state his experience in the use of steel ties.

During the fall of 1900 there was furnished to the Bessemer & Lake Erie railroad about 1,100 steel ties; these were the Carnegie M-14 trough section. During November and December about 750 intermediate ties were placed south of Osgood in a piece of 100-pound rail track where the alignment was a compound curve of six degrees, 30 minutes, reducing to three degrees, 30 minutes, followed by a nine-degree reverse curve. During the following March and April after the slotted angle bars were received, the joint ties were put in. The track was then ballasted in the usual manner with furnace slag. About one-half of the ties had an angle riveted on the under side at the center of tie, and the balance had an angle riveted on the under side just outside of each rail. The object of the angle was to hold the track in line. They caused some inconvenience in the final lining of the track after it was surfaced. At the time the ties were put in all trains ran over this track, but after May 1, 1902, southbound ore trains and a portion of northbound freights were handled over a new line running to the east, but the rest of the trains continued the use of this track. Trains were operated over the nine-degree curve about four years without resurfacing. On account of the soft roadbed portions of the compound curve did not run so long. These ties are still in and are giving good service, but are not as satisfactory as those used since.

During September, 1904, there were received about 1,200 Carnegie I-beam steel ties. During November and December, 1904, and January, 1905, 1,000 of these were put in the track about two miles north of Euclid station, where the track was laid with 100-pound rails on white oak ties about six years old and

[1] A paper presented at the Sept. 28, 1906, meeting of the Railway Club, of Pittsburg.

[2] Chief Engineer, Bessemer & Lake Erie railroad.

ballasted with six or eight inches of slag. The ties were put in by the regular section gang and without any special provision for placing track in better condition than it was before. Additional ballast was not furnished, and as the space occupied by the steel ties, was so much smaller than that occupied by the wooden ties there was not sufficient ballast to half fill the track. Between November, 1904, and June, 1905, the road at this point was single track, and carried the entire tonnage of the B. & L. E. R. R. On this section southbound trains are assisted by pushers, and during a portion of the time pushers with 180,000 pounds on the drivers were used. After June, 1905, southbound traffic has been handled over these ties. The supervisor reports that after the steel ties were put in on this curve he had much less trouble in keeping the track in line than he did before, notwithstanding it was hardly half filled with ballast. Considering that from November to June the pushers were backing up around this curve, that this track held its line is very significant, the cause for which I have attempted to explain later.

Since then we have received 105,000 of these ties, about 70,000 of which have been placed in the track, to give them a thorough test under conditions existing on the B. & L. E. R. R.

Substantially all the freight of this road is handled on that part of the line between Conneaut Harbor and North Bessemer, which is 146 miles in length. The freight tonnage is about 10,000,000 net tons per annum, with an average haul of about 120 miles; the line crosses eight watersheds and as southbound 30-foot grades and over are operated with pushers, it has seven pusher districts, covering about 33 per cent of the road. The curves generally are from three to four degrees, though there are a number running from six to eight degrees. On the north 15 miles of this line engines with 225,000 pounds on the drivers and south of this engines with 160,000 and 180,000 pounds on the drivers are used in handling freight trains. As about 8,000,000 tons of freight is ore and coal, loaded so that the gross weight of car load runs from 136,000 to 144,000 pounds per car, producing a load of 34,000 to 36,000 pounds on the axle, and as 60 per cent of this line is still single track, you will note that the service is very severe.

This year we have made two changes in line, one a half-mile long and the other three and one-half miles long. In this work and on all second track work we use steel ties. On a portion of this work the track was laid with steel ties across a creek bottom and blocked up, and afterwards raised to grade by running on to it filling-in 80,000 to 100,000 pound capacity cars, loaded to their full capacity, which was unloaded and used in raising the track. We are using these ties in new work under all conditions where wooden ties have been used, and find that, taking everything into consideration, it can be done with the same facility and convenience as with wooden ties. In maintenance work either steel or wooden ties, whichever happens to be on hand, are distributed. Steel ties are used in renewing, whether there be one, two or more ties in a place to be renewed, that is, they are used in the main tracks under all conditions where wooden ties have been used.

The wooden tie track in most general use in this country consists of timber ties laid at right angles to the center line at regular intervals, and of two rails running parallel with the center line, resting on the ties and secured thereto with track spikes. The spikes may be driven home from time to time, but they do not so remain, but lift up to a less or greater degree depending on the solidity of the track, so that the primary function of the spike is to keep the rail from moving latterly. Within the limits of ordinary vertical movement the rail is held down on the tie by gravity or the weight of the rail and its load. As a general rule, there is, though it be small, more or less play between the base of the rail and the spike. This is to explain that on account of this play, there is a lack of firm and intimate connection between the rail and ties through the spike, between adjoining ties through the rail, and between the two rails through the ties. On account of this lack of firm and intimate connection, the vertical forces of the load on the rail are not instantly distributed to the adjoining ties, nor are the lateral forces instantly distributed to the other rail and adjoining ties. The vertical load is conveyed to adjoining ties in succession, and the lateral forces or blows are only resisted by the lateral stiffness of one rail until the single rail has moved the amount of the play in the connection between the rails and ties, thereby allowing a movement which aggravates the lateral blows or forces. A rigid connection between the rail and tie will certainly assist in bridging the load and in distributing the lateral blows and forces to both rails and adjacent ties.

The joints, or connections, are the feature in which the steel cars and bridges to the greatest degree excel wooden ones, and in an all-metal track construction you can obtain a superior connection between rail and tie. In an all-metal track you obtain not only the instantaneous resistance of both rails and adjoining ties to lateral blows or forces, but you have the friction between rail and tie made by the fastening in the joints in advance of and following those on which the load directly rests.

This rigidity in the track structure itself independent of the ballast accounts for the track on the four-degree curve, where steel ties were laid in the fall of 1904, remaining in line without being filled and provided with a shoulder of ballast.

We have observed where steel ties are used that we obtain less wear and a more uniform wear of rails. This is accounted for by the better fastening, securing a better connection between rail and tie, preventing the rail from rolling and producing a lateral rigidity in the track structure independent of the ballast.

In putting up track, it is first surfaced and then lined, the operation being repeated until the surface and line are satisfactory, when it is trimmed. No feasible track construction, as far as I know, has yet been devised where the track under heavy load and dense traffic will permanently remain in surface and line, and as surfacing and lining have to be repeated periodically, the design of the tie should be such as to make it adapted to this operation. The wooden tie with parallel top and bottom faces is well adapted, as you can line it within reasonable limits without throwing the track out of surface; the only ballast which prevents lining is that at the end, which can readily be removed and replaced when lining is completed. The failure to recognize that the form of the tie should be such that the track can be lined without throwing it out of surface has made numerous designs otherwise good not practicable for use. This brings us to the conclusion that a tie with straight sides in general, with distortions to resist movement in ballast, so located that the ballast obstructing the movement can readily be removed before and after the lining has been done. will fulfill the required conditions.

The life of wood white oak ties under heavy traffic ranges from four years on sharp curves to eight or ten years on tangents. There is a wide difference in the durability of timber, even when it is the same kind taken from the same pack of woods. It is beyond the ability of inspector or trackmen to select ties that will give the same duration of service. The tie begins to deteriorate from the time it is put in place, the rate of deterioration increasing until it becomes necessary to remove the tie. There is no track work that compensates fully for this deterioration, so you cannot maintain a condition equal to an all new tie track.

The steel tie maintains its section and the bed under the tie does not have to be disturbed on account of the tie becoming soft, nor on account of the ef-

fective thickness of the tie becoming less due to rail or tie plate bedding into the tie. The steel tie up to failure retains the same dimensions and efficiency, reducing the work required for surfacing and lining, and it is possible throughout the life of the tie to maintain track of the same excellence as with all new ties. Up to the present time we have only had one broken rail on steel ties and the report attributes this break to a flaw in the rail.

We have not used steel ties long enough to determine their life under our conditions, but an examination of a broken tie after six years' service does not indicate that rusting under ordinary conditions should cause any anxiety. I somewhere read a statement that Mr. Post, chief engineer of the Netherland State railroad, found that ties weighing 125 pounds laid in sand and gravel ballast had decreased 8¼ pounds in 35 years, but were still good for 20 years' service.

We have stretches of track laid with all-steel ties up to 4.4 miles in length, and find that after the track is filled with ballast there is a very appreciable reduction of noise in general and at the joints below what can be obtained with wooden tie track.

Take any period of five years and the Interstate Commerce Commission reports show that tie renewals are from two to two and a half times the cost of the renewal of rails. On the assumption that the steel tie can be produced at the same price per pound as the steel rail, and that the life of the steel tie will be one and one-half times that of the steel rail, the cost of tie renewal would be about equal to that of rail renewal. Experience in Europe and observation from our own experience here indicate that a longer life will be obtained. The possible reduction of cost of tie renewals to the same cost as rail renewals shows the great economy obtainable from the use of steel ties.

THE IRON MINES AT EVELETH, MINN

Office of THE IRON TRADE REVIEW, Duluth, September 29

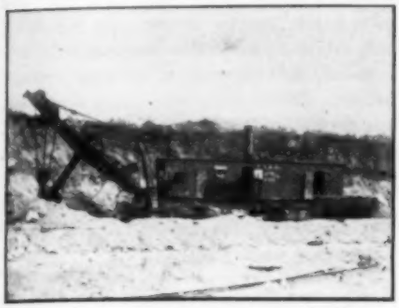
With the exception of the little Troy mine, on the edge of the Fayal deposit, belonging to Pickands, Mather & Co., and producing some hundred thousand odd tons of rather low grade ore a year, the town of Eveleth is enclosed on three sides by property under lease to the Oliver Iron Mining Co. An area equivalent to nearly eleven quarter sections is occupied by the Fayal, Adams, Spruce mines and the Leonidas and Gross explorations. The Fayal mine was written of in THE IRON TRADE REVIEW of Aug. 30, and the accompanying view shows one end of the No. 3 extension pit which has recently had placed in it a second shovel, shipping ore from the south end.

The Spruce mine now includes the old Cloquet property and has four shafts down. No. 3 is inactive at present and No. 4 is just sinking, being down 160 feet, which is the depth of the first level. It is to be carried down to a depth of 300 feet and is a standard three compartment shaft. At present there is a No. 7 Cameron in the shaft, but in general the district is not bothered greatly with water, only pumping some five or six hundred gallons.

The Adams mine adjoining is one of the former Rockefeller properties, being a part of the holdings of the Lake Superior Consolidated Iron Mines, and the evidences of that ownership are still seen and felt. At the time it was first operated, only that ore which ran 60 per cent or over in iron was worth taking out and the remainder of the deposit, running somewhat lower in iron and constituting a large part of the entire ore body, was left. As the ore lay, the richer ore was deposited above the lean ore for the most part, and with a dip downward toward the southern and eastern boundaries of the deposit. The view shown is looking toward the southeast from the No. 4 shaft toward the town and across the caves from beneath which the high grade-ore was formerly taken. There are now six shafts of which No. 1 and No. 3 are inactive. There are three levels opened up in the Adams mine. On the first level the operations are directed toward getting out the ore from under the old caves, which makes the situation somewhat unique, the working being carried right out to where the old timbers have come down. Throughout the other parts of this level and the second level there have been a number of pillars of the poorer ore left and these are now being taken out. The workings extend over to the No. 6 shaft on one end, which is the newer portion of the mine and in the other direction the third level runs out under the milling pit which is on the north side of the property. The tramming is all done on the third level and one of the features of the mine is the long distance which the ore has to be carried to the shaft. The layout on the surface is such that another shaft could not be sunk to take the ore from the milling pit and so it all goes to No. 4 shaft. Long tramming distances have always been necessary since the opening of the mine, but now it is done by electric motors, both in the Adams and the Spruce, and has been since some time before the change of regime, and the distances are not so great a disadvantage. The electric locomotives were built by the Baldwin Locomotive Works, using Westinghouse motors. The ore mined underground is raised through the No. 6 shaft in the summer, but in the winter stocking is done near the No. 4 shaft, which takes care of both the pit ore and the other. Between five and six hundred thousand tons were stocked at the Adams and Spruce last winter, but the last of it is being shipped now.

GENERAL VIEW OF LOCATION AND TOWN OF EVELETH, TAKEN FROM NO. 4 SHAFT OF ADAMS MINE. WOODEN SHAFT IN FOREGROUND IS NO. 3, NOW IDLE. SHAFT NO. 1, OF SPRUCE MINE IN DISTANCE.

The milling pit has about 24 mills, all of which are not in operation, however. It has been worked down pretty close to the third level and in some of the mills the raises have been mined down to the hopper at the bottom. The ore vein trends westward in the pit, and the west and north banks are being stripped. A



A Shovel Stripping on the West Bank of the Adams.

new shaft will have to be sunk on the northwest bank somewhere to get at the ore from that end as it goes down deeper.

With the several power houses now at the various shafts, this location presents a very busy aspect, but another building for a compressor plant has just been erected which will make the equipment one of the best on the range. The new building is close to the new No. 4 Spruce shaft and alongside of the D. M. & N. tracks. It is of brick on a granite foundation, the stone for which was obtained right at Eveleth and is a combined engine and boiler house. The boilers have already been installed and are of the standard type now being used by the Oliver Iron Mining Co., at a number of its mines, consisting of three 72 x 18 return tubular boilers built by the Keewanee Boiler Works at Keewanee, Ills. The feed pump is an 8 x 5 x 10 Prescott and the Webster heating system will be installed.

The compressors themselves are the first of a new type which has been designed to provide for operation by electricity when the new plant of the Northern Development Co. shall make electric power available on the range at a low cost. In the meantime and whenever it may become necessary, they will be operated by steam. This is accomplished by placing the air cylinders between the steam cylinders and the cranks, which means simply an interchanging of the position of the steam and air cylinders. The fly wheel is a rope drive sheave so that to change over from steam to electricity all that is necessary is to uncouple the steam cylinders and to rig up the rope drive connecting the motor with the air cylinders. The other specifications for the compressors which will be furnished by the Allis-Chalmers Co., provide for a high pressure steam cylinder 22 inches in diameter, low pressure, 42 inches. The low pressure air cylinder is to be 38 inches in diameter, and the high pressure 24 inches. The compressor will have a 48-inch stroke and a capacity of 4,040 cubic feet of free air per minute. The steam end will be of the double tandem compound Corliss type, and the air end cross compound. The intercooler will be underneath and the plant will be run condensing with a belt-driven jet condenser. Air will be supplied to the entire group of mines including the Fayal, from this plant.

The Leonidas and Gross are being explored, but no development work has

No. 3 Extension Pit at Fayal Mine.

been done so far. There are five drills on the Leonidas forties, and some work is being done on the Gross. J. H. Hearding, who came from the Gogebic range to the Mesabi, is the general superintendent in charge of the Adams and Spruce. Thos. H. David is the underground superintendent, and Capt. "Jim" Corbett has charge of the Adams. The surface work is in charge of Supt. Edward Helps, and Robt. Powell is captain of the Spruce.

Directors of the Standard Steel Car Forge Co., New Castle, Pa., have appropriated $500,000 for the enlargement of its plant.

IMPORTANT DEVELOPMENT WORK ON MENOMINEE RANGE.

(Special Correspondence.)

Iron Mountain, Mich., Sept. 25.—Largely because of the work of the diamond drill, which has located ore deposits underneath heavy overburden of sand and similar treacherous material through which it is not possible or feasible to sink exploratory shafts, the Iron River-Stambaugh field of the Menominee range is developing into one of the most important of all Michigan districts. Already there are six mines on the shipping list—the Caspian, Baltic, Dober, Beta, Hiawatha and Youngs—and active exploratory or development work is under way at the James, Barras-Ross, Minckler, Buchholtz, Waldron, St. Clair, Selden, Sheridan, Tully, Baker, McDonald, Brown, Carlson, Oleson, Hamilton, Hammer, Swanson, Morgan, Fogarty, Blair and other properties, the operations having attained a scope hardly dreamed of half a decade ago. A panoramic view from the top of Stambaugh hill presents a scene of thirty or more smoke-stacks belching out smoke from fuel burning under the many boilers which are generating the steam for the operation of the various classes of machinery in commission, yet the district is as yet in its infancy and it doubtless will be many years before its limits are definitely defined. Ore is not being found in every drill hole or test pit put down, nor is all the mineral tapped of a first-class grade, but the discoveries already made give assurance that the field has a great future before it. The activity would be still greater were sufficient labor available. In the neighborhood of 1,300 men are at work now, and it is estimated that there are places open for half a thousand more.

The Caspian and Baltic.

The biggest ore body yet discovered in the district is that which Pickands, Mather & Co. are developing at the Caspian mine, in Section 1, 42-35. The deposit is also very large at the same company's Baltic property, in Section 7, 42-34, which already has produced 600,000 tons, although it has only one small shaft as yet, and this down not much more than 400 feet. Both the Caspian and Baltic ore runs about 57 per cent metallic iron. The Dober mine of the Steel Corporation is showing up more ore as it is opened, and is now considered one of the best mines in the district. The ore runs from 56 to 58 per cent, and is unusually hard. A large 21-foot upright boiler, received some months ago, has been installed, giving the mine a battery of three, aggregating 400 horsepower. The Beta mine of the Mineral Mining Co., produces a red hematite ore assaying in metallic iron from

50 to 58 per cent. The deposit is substantial and continuous, and apparently is good for many years to come. The deepest points penetrated, about 400 feet down, look as well as any of the workings, and there is an abundance of ore in sight available for production. A second shaft is sinking. The Hiawatha is in the hands of the Buffalo & Susquehanna Steel interests, having been unwatered some months ago, and is being explored and developed with a view to ultimate purchase should the new ground opened prove as expected. The Section 12, or Youngs mine, which some months ago was sold to eastern furnace interests, also presents a fine appearance, giving evidence of developing into a considerably larger proposition than was anticipated. It is planned to put down a new and larger shaft at a point about forty rods northwest of the present opening. This work will be done during the winter, in readiness for the coming season, and in the meantime a new level will be opened from the present shaft. The work of erecting a new engine house, 40 x 50 feet in dimensions, is under way, and it is probable that a dozen more dwelling houses will be built this fall. The Youngs adjoins the Baltic and Fogarty, and was opened by the G. W. Youngs Mining Co., which still retains a small interest.

Exploring the Hamilton.

Pickands, Mather & Co., who recently took options on the Hammer tract and a portion of the Minckler property, are sinking an exploratory shaft at the old Hamilton, across the line from where ore was shown up on the DeGrasse property, which latter is also in the hands of this big Cleveland concern. It will be necessary at the Hamilton to sink to a depth of upwards of 200 feet, most of this distance through a sand overburden, before the ledge is encountered, and before drifting to the ore is started an additional depth of 100 feet will be attained. The ore vein proved up at the DeGrasse tract is thought to extend diagonally across the Hamilton. The G. W. Youngs Mining Co. is exploring the McFarland property, the fee to which is owned by Iron River and Crystal Falls men. Two pits are going down, one of which is below the ledge, which was struck at a depth of thirty feet. Considerable water has been tapped, and pumps will be put in to handle it. M. T. Sullivan of Iron River, and associates have an option on the Oberg property, in the Brule country, and will test it with a diamond drill. Out croppings of ore have been found in this vicinity, and it might be that a new district will be opened in this part of the country.

The Few Iron Mining Co., composed of officials of the Wisconsin & Michigan railway, has started the work of developing the lands which it controls in Section 6, 39-29, west of Norway. A plant of machinery for shaft sinking is being installed. A shaft, 6 by 12 feet, inside of timbers, will be put down in the hanging wall to a depth of 100 feet or more, when the ore formation will be crosscut. Upwards of a score of test pits were sunk across the formation, and merchantable ore is said to have been encountered in most all of them, indicating a deposit something like 275 feet in width. The company has 200 acres under lease. Operations are in charge of Capt. Harry Sincock. The big hollow tile smoke-stack, 6 feet in inside diameter and 135 feet tall, exclusive of the foundation, to be erected at the new boiler plant of the great "C Ludington" shaft of the Steel Corporation's Chapin mine at Iron Mountain, will be built by the Adolphus Custodis Co., of New York, and will be the nineteenth of the kind constructed for the mining company by the same concern. The foundation, of concrete, 18 by 18 feet and ten feet in depth, is about ready. A similar stack was recently completed for the Steel Corporation at its Section 16 mine, near Ishpeming, Marquette range.

New Machine Shops.

The Steel Corporation's big new machine shop, erected at Ishpeming to serve the company's various mines on the Marquette range, has gone into commission this week. The work of construction, started over a year ago, was completed some weeks since, subsequent to which a large force of mechanics has been engaged in installing the new engine, machinery and shafting, and latterly in removing from the old to the new the apparatus in use at the former structure. The new shop has twice the floor space of the old one, but with the additional machinery in position there is no spare room. The south side of the building is provided with a railroad track, while above it is a large moving crane of sufficient capacity to pick up a locomotive or steam shovel. The shop is of sufficient length to handle two steam shovels at a time. The old building is to be converted into a carpenter shop, and the present carpenter shop will be fitted up as a warehouse. However, it doubtless will be nearly a year before these changes are possible, as much work in the way of remodeling is to be done. The present warehouse has been inadequate for some time, and is crowded from floor to ceiling. All the company's mines at both Ishpeming and Negaunee receive their supplies from this building. The corporation's new boiler house at the Section 16 mine will be completed about the middle of next month, but it will be three weeks after that time before the new boilers go into commission.

The shaft at the Jones & Laughlin Steel Co.'s new Rolling Mill mine at Negaunee has attained a depth of 650 feet, and a plat is being cut at 620 feet. Ore has been cut, and drifts will be run to develop the deposit. The ore is a soft hematite, very dark in color, and of a greasy, sticky nature, just the thing for mixture with the fine-grained, dry ores of the company's Mesabi range mines. There has been some delay in the receipt of lumber and other material needed for the shafthouse, but the new plant of machinery is in readiness and it is expected that the mine will enter the producing list before the close of the season of navigation.

Lake Superior Corporation.—Director Wilson Smith, of the Lake Superior Corporation, speaking of the results achieved by the company during the past fiscal year, says: "Tht various industries operated by the Lake Superior Corporation, including, as they do, the most important aggregate in Canada, have made solid progress during the whole year. After paying the interest on its first mortgage bonds and expending a considerable amount on new plant, the company was easily able to declare a 5 per cent dividend on the $3,000,000 of income bonds. When it is remembered that the works were only reorganized a little over two years ago, the progress made is most excellent. It is rare that we find so many different industries forming one homeogenious whole, with all the elements which tend to success such as are enjoyed by the Lake Superior Corporation."

Immigrants for South. — Southern manufacturers are highly pleased over the announcement that it is the intention of the North German Lloyd Steamship Co. to include Savannah and Charleston in its list of transcontinental ports, a landing being made at these points largely for the placing of immigrants destined for work in the southern districts. Complaint has been repeatedly made that the northern manufacturers have been reaping almost the entire benefit of the labor of immigrants who heretofore have been landed at New York and other northern points.

Princess Furnace, Glen Wilton, Va., is shut down for necessary repairs and will be out of blast for three or four weeks. It is the intention of the Princess Furnace Co. to replace the present furnace with a modern stack thoroughly up-to-date.

Distinguished Career of Dr. R. W. Raymond.

One of the most prominent Americans who attended the recent joint meeting of the Iron and Steel Institute and the American Institute of Mining Engineers and participated in the discussions was Dr. R. W. Raymond, secretary, the A. I. M. E.

Rossiter Worthington Raymond was born at Cincinnati, Ohio, April 27, 1840; was educated in the public schools and the high school of Syracuse, N. Y., and subsequently in the Polytechnic Institute of Brooklyn, N. Y., of which his uncle, Dr. John H. Raymond (afterwards president of Vassar College) was then president, and from which he was graduated, at the head of his class, in 1858. He studied in Germany at the universities of Heidelberg and Munich and the Mining Academy of Freiberg, from 1858 to 1861. During this period he became intimately acquainted with political leaders of the "liberal" movement in Germany, and the inside knowledge thus acquired was shown in private letters, which led to his engagement as foreign correspondent of the New York *Times*. In this capacity, he furnished to that journal, besides accounts of European politics, reports of scientific progress, among which was the first popular description sent to America of the new discovery of spectrum analysis made by Benson and Kirchoff, the latter of whom had been instructed in physics at Heidelberg.

Returning to America at the outbreak of the civil war in 1861, he served in the Union army until 1864, resigning, after several promotions, with the final rank of captain, on the staff of Major General J. C. Fremont, by whom, during his campaign in the valley of Virginia, he was officially commended for gallant and meritorious conduct.

From 1864 to 1868, he practiced as consulting and mining engineer and metallurgist in New York City. In 1867, he became the editor of the *American Journal of Mining* (afterwards called the *Engineering and Mining Journal*), with which he was for many years connected in that capacity, and still remains a special contributor. The number of that journal recently issued in celebration of its fortieth anniversary, contains accounts of his work and influence during its early struggles.

In 1868, he was appointed United States commissioner of mining statistics for the states and territories west of the Rocky mountains, a position which he retained until 1876, making eight annual reports, which were published by the government in octavo volumes, several of which were also issued by private publishers, by reason of their popular interest and value. They contained descriptions of the geology, ore deposits and mining enterprises of the United States public domain, discussions of metallurgical processes adapted to American condi-

Dr. R. W. Raymond.

tions, and observations and criticisms concerning the practical operation of the United States mineral land laws of 1866 and subsequent years.

In 1870, he became, and thereafter for many years, continued to be a non-resident member of the faculty of Lafayette college, giving annually a course of lectures on economic geology, and, in one year of that period, the entire course on mining engineering. In 1870, he received from Lafayette college the honorary degree of Ph. D.

In 1871, he was one of the founders of the American Institute of Mining Engineers, of which he became in that year vice president (discharging the active duties of the venerable president, David Thomas), by successive elections in the three following years, the president, and from 1884 to the present time, by annual re-election, the secretary. In this capacity, he has been practically the executive manager of that society, and the editor of its "Transactions," 25 octavo volumes of which, averaging 1,000 pages each, have been carefully edited and published by him.

In 1873, he was appointed United States commissioner to the Vienna International Exposition, and, while in Europe for that duty, delivered addresses in the German language at the international convention on patent law, and the international meeting of geologists (both at Vienna), and an address in English at the meeting of the Iron and Steel Institute, in Liege, Belgium.

In 1884, he prepared for the United States Geological Survey a historical sketch of mining law,* which was subsequently translated into German, and published in full by the *Journal des Bergrechtes*, (the only periodical in the world devoted exclusively to the subject of mining jurisprudence), with high praise, and the expression of some surprise that an American author should have comprehended and summarized so completely the complicated ancient and medieval history of the subject.

In 1893, Dr. Raymond was admitted to the bar of the supreme court of New York state, and in 1898 to that of the federal district and circuit courts. His practice has been confined, however, to cases involving either mining or patent law, in both of which departments he has been named in judicial decisions as an authority.

Outside of the work above set forth, he has been a contributor of important articles to magazines, cyclopedias, etc., among which may be named Appleton's American Cyclopedia (2d ed. 1873-1876) to which he contributed many articles.

In 1885, Dr. Raymond was appointed one of the three New York state commissioners of electric subways for the city of Brooklyn, and served as member and secretary of the board until it ceased to exist, four years later. Its final report, prepared by him, was generally regarded at the time as the best up-to-date statement of the problem of municipal engineering and policy involved in the distribution of electric conductors, and after the large extra edition originally printed had been exhausted, it was entirely reprinted at private cost, to

*Mineral Resources of the United States, Washington, 1885, p. 988.

supply the continuing demand for it. After the close of his official term as commissioner, he became, and still is, consulting engineer to the New York & New Jersey Telephone Co.

He is an honorary member (the only American enjoying that distinction) of the Society of Civil Engineers of France, and the Iron and Steel Institute of Great Britain; also of the American Philosophical Society.

He has, upon invitation, delivered many addresses at colleges and universities, including Yale, Columbia, Cornell, Lehigh, Lafayette, Union, California, the Worcester Polytechnic, the Brooklyn Polytechnic, the New York College of Physicians and Surgeons, etc.

From 1875 to 1895, he was associated as consulting engineer with the firm of Cooper & Hewitt, owners of the New Jersey Steel & Iron Co., the Trenton Iron Co., the Durham Iron Works and the Ringwood Iron Works, as well as many mines of iron ore and coal. As president of the Alliance Coal Co., and director of the Lehigh and Wilkesbarre Coal Co., and a personal friend of Franklin B. Gowan, he became acquainted with the inner history of the memorable campaign against the "Molly Maguires," and has since been known as a fearless opponent of the tyranny too often practiced in the name of "labor." His articles on "Labor and Law," "Labor and Liberty," etc., published in the *Engineering and Mining Journal*, at the time of the Homestead riots, attracted much attention, and, together with similarly frank discussions of the operations of the Western Federation of Miners in Montana, Idaho and Colorado, earned for him the distinction of special denunciations and threats from the labor unions thus criticized.

While connected with Messrs. Cooper & Hewitt, he assisted Hon. A. S. Hewitt in the management of Cooper Union, and directed for many years the Saturday Evening Free Popular Lectures on Science, etc., which constituted the beginning of what has now become a vast lecture system in the city of New York. In this annual course, Dr. Raymond engaged the lecturers (often lecturing himself) and presided on the platform.

After the death of Mr. Cooper, he wrote, at the request of the family, a life of Peter Cooper, which was published by Houghton, Mifflin & Co., in 1901.

In addition to the professional work above detailed, Dr. Raymond has published several volumes of sketches of western travel and exploration, and stories (written mainly for the children of Plymouth Sunday school, Brooklyn), and one volume of biblical criticism, containing his lectures on the book of Job. His first book was in the German language, ("Die Leibgarde," published in 1863, by Ticknor & Fields, Boston, Mass.).

Outside the pages of the *Engineering and Mining Journal*, and the "Transactions" of the American Institute of Mining Engineers, he has been a contributor to the *Atlantic Monthly, Cassier's Magazine*, and various technical and scientific journals.

In June, 1906, Dr. Raymond received the additional honorary degree of L. L. D. from Lehigh university. On this occasion, speaking as an adopted alumnus of the university, he delivered to the graduating classes an address on "Professional Ethics," which has been widely quoted and approved.

QUAKER CITY IRON WORKS.

A new plant for the manufacture of boilers, tanks, stacks and plate metal works has recently been started in Philadelphia. Those interested are practical men in this line, and are well acquainted with the trade. They have incorporated under the laws of the State of Pennsylvania, with authorized capital stock of $50,000, and are now erecting a substantial brick and steel factory building in the upper part of the city. The executive offices of the company are located at No. 1328 Arch street, in the heart of the business district, connected by private telephone with the works. The president, H. B. League, is a young man well known in the plate metal trade. He recently left the Philadelphia Iron Works, where he was engaged for a number of years as manager, to start this new enterprise. Associated with him in the executive department is Arthur Letchworth, secretary and treasurer, and John J. Mooney is factory manager. He was lately superintendent of the boiler department of the Bethlehem Cteel Co., and has had experience in several other large plants. New machines and tools of the most up-to-date pattern have been installed, and a particular study made to have a plant capable of turning out high-class work at the lowest possible cost. The railroad facilities for receiving and shipping freight are very convenient, and will make a considerable item in figuring low costs. The Pennsylvania Railroad local freight station directly across the street and a siding extending into the works removes the necessity for double handling and expensive hauling.

THE INCREASED COST OF SELLING MACHINERY.—WHY IT CANNOT BE REDUCED.[1]

I will take up first, the increased cost of selling machinery.

What constitutes the selling cost?

The principal items are interest on capital invested; taxes and insurance, rental, salaries, traveling expense, handling expense, including cartage, loss and damage, advertising expense, including catalogs, circulars, etc., telephone and telegraph charges, stationery and postage, office equipment, bad debts. It is our common experience that these various items of expense have grown materially during the past few years; this increase has been constant, even though our sales have not proportionately grown. Let us consider these items in order.

Under normal conditions, the dealer must be able to make quick deliveries, which require larger stocks, the active competition necessitates elastic terms of payment. These, together with increased operating expenses, which are always payable in cash, call for a larger invested capital, and in consequence a larger interest account. This also involves a corresponding increase in taxes and insurance. This rule also applies to rentals, as larger stocks require more room, hence more expense. Under present conditions, it is imperative that every successful dealer shall have a large, experienced and efficient corps of salesmen. Manufacturers of desirable selling lines of machine tools compel their selling agents to cover the territory assigned them systematically and intelligently. To do this is costly, both in the matter of salesmen and traveling expenses. A few years ago an inquiry could be answered by mail with a reasonable expectation that an order would follow. Now every important inquiry must be assigned to a competent salesmen who must give his whole attention to it until the matter is closed. This involves added expense, so that a business of sufficient volume to be profitable needs the service of a number of salesmen. We have also found out that desirable and efficient salesmen are constantly looking for larger salaries which must be paid to retain their services. We all know that we cannot afford to let trained salesmen, who have become familiar with our patrons, selling product and method of doing business, go elsewhere, as it is quite difficult and often very expensive to replace them. It has been the experience of our company that we could not afford to keep in our employ salesmen whose services were not growing yearly more valuable, which in-

[1]Paper read before the special meeting of the National Supply & Machinery Dealers' Association, Detroit, Sept. 27, by Henry Prentiss, Prentiss Tool & Supply Co., New York.

volved increasing their compensation in the same ratio.

Many Incidental Expenses.

It is also necessary to spend time and money in working up business independent of inquiries that may reach the dealer through the mail or by personal call from the inquirer. Because of this, advertising expenses, which include the cost of catalogs, circulars, etc., are constantly increasing and necessarily so. Our patrons are becoming more and more alive to their needs, and what will supply them, and if we do not acquaint them continuously with our ability to serve them, they go elsewhere to make their purchases. We must, therefore, supplement our salesmen's efforts, not only by the distribution of illustrative and descriptive matter in the shape of catalogs and circulars, but also through the advertising columns of the principal trade papers.

Handling expenses, including cartage, loss and damage, are growing disproportionately to the increased volume of business; loss and damage items are more frequent than formerly. It does seem as if the transportation companies, latterly, have become less careful in handling shipments. The outcome is increased expense to the dealer. These items, directly and indirectly, aggregate a large amount in a year's business.

Telegraph and telephone charges, postage and stationery and office equipment, including salaries, require largely increased outlays yearly. We must have up-to-date methods and equipment for transacting our business. The item of bad debts must not be overlooked. We all have losses of this kind. It sometimes happens that we go for an extended period without any bad debts, and begin to hope that these unpleasant experiences are done with: but, alas, we find this is not so. Loss after loss will strike us until the general average is more than maintained. This experience teaches us that we must set aside monthly a considerable amount relative to our net profits to offset this loss. There are many other items of expense, which I have not mentioned here, that during a whole year total no inconsiderable amount. No doubt it is the experience of all our members that the expense account has caused more continuous and perplexing thought than all other matters combined that require attention in our business. We all wish to conduct same on broad and liberal lines; to have every one associated with us contented and well satisfied; yet we feel that it is only just that we should get a fair return upon the capital invested and reasonable compensation for our work. The dealer is certainly a hard worker, and has long hours whether his efforts meet with success or failure. The expense account is yearly growing. It is true that the volume of business is also increasing, but not in the same proportion. How shall we successfully cope with this situation? What is our remedy? Is it not to present this whole matter to the manufacturers whom we represent so that they will see the necessity of readjusting the resale prices to afford us a larger selling commission, sufficient to protect our reasonable expense and leave an adequate amount to reimburse us for the capital invested and trained and experienced service rendered?

We are largely to blame for present conditions. We have gone along from year to year allowing our expenses to mount up while our commissions have been shrinking. Without looking into this matter, we blindly assumed that the increased charges were to be met by increased sales, failing to realize that there must be an increased commission as well. We now have our eyes open. Let us take such action individually and collectively, not hastily but wisely, as will afford us a larger percentage on our gross sales. It is true, business is now very good, and is likely to continue good for some time in the future. We must, however, look out for the lean years, which are sure to come, and be prepared for them.

Why Increased Cost Cannot be Reduced.

It is unnecessary for me to take much time to make this clear to you. We all know that we must maintain an efficient selling organization, which requires constant and intelligent thought, whether business is profitable or otherwise. The expense involved in doing this is fixed and ever increasing. It is inevitable that this should be so. Improved methods and equipment combined with intelligent and effective work are costly in outlay but productive in results.

A Liberal Policy Towards the Dealer.

No doubt every successful manufacturer of machine tools will admit that this interest is vital and most important. Why? Because the dealer is almost indispensable to the success of the manufacturer. The latter finds that to supply a modern shop equipment, with competent heads and skillful workmen in the various departments, design, perfect and prepare for the market a line of machine tools to meet the constantly changing and more onerous conditions, and carry a sufficient stock to meet reasonable requirements at short notice, together with the multifarious calls which the manufacturer has to consider and dispose of, tax his time and resources to such a degree as to unfit him, if otherwise competent, to successfully master the diverse and difficult problems involved in marketing his product. It was not so long ago that the dealer's relation to the manufacturer was quite different from what it is at present. Then the manufacturer consigned his stock and waited, when sale was made, until the dealer was paid, for his remittance. Now the dealer must carry a representative stock, guarantee a satisfactory amount of sales yearly and pay promptly for all purchases whether sold or not. In other words, the dealer's relation to the manufacturer has changed from an agent selling on commission to an outright buyer, thus fulfilling all the conditions of a merchant.

Is it not reasonable that this changed relation should command a larger return?

This new relation is helpful to the manufacturer in many ways, a few of which I will mention.

The dealer now carries the bulk of the manufactured stock on hand, pays regularly and promptly in appreciable amounts; keeps in touch with the buying public and is able to give the manufacturer many valuable and necessary pointers, which otherwise would be difficult and expensive to acquire. I believe the intelligent manufacturer fully appreciates all of these advantages and is willing to give the dealer an adequate return, but we cannot expect him to take the initiative in this matter. I am pleased to state that the manufacturers for whom our company has been so fortunate as to be the selling agent for several years past, have been in the main just and liberal in their treatment of us. If the commissions allowed have not been so large as we needed, it has not been because of their unwillingness to increase same, but owing to competitive conditions which required organized and harmonious action on the part of all competing lines to remedy. It seems to me that the plan outlined at the meeting of the National Machine Tool Builders' Association held at Atlantic City in May last, as embodied in its official report (every one of our members should secure and read this report), is fair and reasonable, and if carried out would settle this vexed question in a most satisfactory manner. I had thought, until I read this report, that the manufacturers were not in sympathy with the dealers' ideas as to what action should be taken, but were quite antagonistic, but after reading the official report mentioned, I must say, that in view of the complicated situation and the difficulty of straightening it out at such a gathering, I think their attitude and action were all we could expect at that time. Is it not reasonable that they should wish to know the

true conditions, what will remedy the troubles complained of, and how this can be effected? Having this knowledge they will certainly be glad to take the necessary action providing they can feel assured that this will not seriously jeopardize their interests. We are perhaps better posted than the manufacturers as to what changes can wisely be made in the resale prices. This knowledge makes us confident that a readjustment is feasible which will prove satisfactory to all interested parties. Let us not forget that the manufacturer and dealer are equally necessary to each other, and that their interests are mutual and identical, "united we stand, divided we fall." We must be just towards them, which means that we will act in accordance with our highest sense of what is right; thus doing, we may be sure that they will respond in the same spirit, and that the outcome will bring prosperity and contentment to us all.

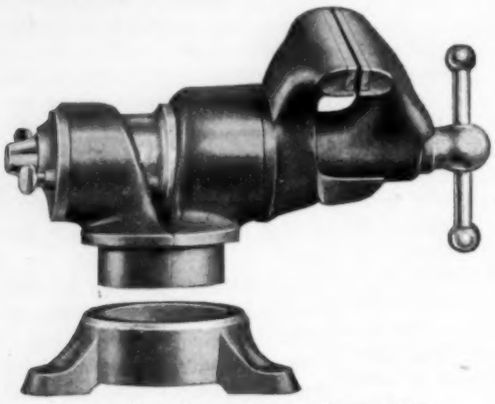


FIG. 1.—THE LONG DOUBLE SWIVEL VISE.

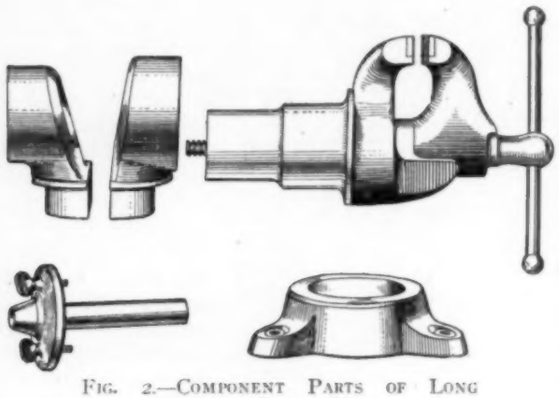


FIG. 2.—COMPONENT PARTS OF LONG DOUBLE SWIVEL VISE.

A DOUBLE SWIVEL VISE

The Long patent universal double swivel vise is built by the Pittsburg Automatic Vise & Tool Co., Pittsburg, and is shown in the accompanying illustration. The vise is capable of turning in any direction, describing any angle of two complete circles. By tightening the jaws upon the piece held in the vise, both swivels are automatically locked and rigidly held. The vise, which is shown in Fig. 1, is composed of eight parts, which, with the exception of the screw, and interior parts, are shown in Fig. 2. The base, which is adapted to be secured to any suitable support, is formed with an annular seat for the body of the vise. The body consists of two halves or yokes, provided each with a section or half of a hub seated in the base. They are adapted to be slightly tilted in respect to each other and their seat, so that when they are drawn together at the top they are pressed outward in the seat and thus locked frictionally against it. The rear jaw is adapted to rotate about its axis within the body of the vise. It has two diameters, the larger one working in the front yoke and the smaller one in the rear. The friction plate is affixed to the outer extremity of the jaw member, the cap bearing against the outer edge of the rear yoke and serving as a support and bearing for the sleeve or nut. This latter possesses a head bearing against the outside of the friction plate, and extending thence through the same into the internal bore of the front jaw. A special bearing sleeve is placed on the screw between its head and the fixed collar, thus affording freedom of turning. It is designed to be driven or forced tightly upon its seat in the front jaw, so as to serve as a reliable backing for the collar when the screw is rotated to open the jaws. This also gives the head of the screw a solid bearing against the full stock of the front jaw. When the screw is tightened, it tilts the body section towards each other and locks them against rotation in the base. The inner jaw member has a splined connection with the inner jaw, thus preventing its rotation in respect to the jaw. The jaw facings are all of tool steel, while the vise itself is composed of an alloy mixture. The screw is a hammered steel forging. The vise is dust proof, non-slipping and non-breakable. Due to its ability to have its jaws revolve in any direction, it serves as two vises, for if a jaw smaller than its face is desired, the jaws are simply thrown to one side and the side of the jaw used. If a stationary vise is desired, the thumb screws on the rear can be slightly turned and the two swivels tightly locked. By this means, any desired friction can be obtained.

Other types of vise manufactured by this company are the single swivel vise, which can be rotated in one direction only, the single swivel pipe vise and the double swivel pipe vise, shown in Fig. 3. This latter comprises a pair of jaws, together with a chain for holding the pipe, and it is tightened by operating the screw as in the ordinary type of vise. A pipe attachment is also made for use with the single swivel vise, comprising a pair of jaws on the rear end of the vise and a chain for holding the pipe.

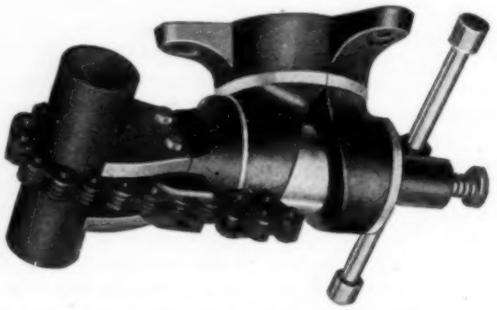


FIG. 3.—LONG DOUBLE SWIVEL PIPE VISE.

Mayor Dunne, of Chicago, favors the idea of establishing a municipal iron foundry adjoining the city's machine shop and the present municipal brass works. The cost of a foundry sufficiently large to be in the neighborhood of $50,000, and the mayor thinks it will not only be a source of economy for the city, but "would save time in obtaining the castings needed by the city as well."

Press Comments on Mr. Bryan's Letter to The Iron Trade Review.

The recent correspondence between THE IRON TRADE REVIEW and William Jennings Bryan, published in our issue of Sept. 20, in regard to so-called "trusts" has been widely published and commented upon. The following are abstracts of a few of the editorials of leading newspapers:

Wall Street Journal.

Mr. Bryan had defined a trust to be any corporation which controlled so much of the product of any article that it can fix the terms and conditions of the sale. That was sufficiently elastic, but it didn't satisfy the editor of THE IRON TRADE REVIEW. So he wrote to Mr. Bryan. He named the share of the iron and steel trade which is controlled by the United States Steel Corporation. He showed that this corporation produced over 71 per cent of the tin plates, over 66 per cent of the wire nails, over 60 per cent of the crude steel, nearly 50 per cent of the finished roll products, over 40 per cent of the iron ore and the pig iron and nearly 38 per cent of the coke. The question was whether the United States Steel Corporation on this showing is a trust or not.

Mr. Bryan immediately stated the broad principle which governed him in drawing the line in this matter. In his reply to the editor he said:

"I draw the line at 50 per cent and do not accept an advertisement for my paper of a corporation controlling more than 50 per cent of the product in which it deals."

The line, therefore, is 50 per cent of the product. When a corporation produces 51 per cent it is a trust. When it produces 49 per cent it is simply a competing corporation in a healthy free trade. Of course no reasonable man will undertake to dispute the conclusion reached by Mr. Bryan. He speaks with the authority of an expert. Still there are some who think that a line drawn at 50 per cent is no line at all, and that Mr. Bryan's proposition is one of extreme, unmitigated, unadulterated, colossal, absurdity. If 50 per cent is the line that separates a simple corporation from a monopoly then Mr. Bryan is at liberty to accept for his paper, the *Commoner*, an advertisement from Mr. Harriman, for Mr. Harriman's corporation, the Union Pacific, controls the Southern Pacific by ownership of less than 46 per cent of the stock of that company. Under Mr. Bryan's definition, therefore, the Union Pacific is not a monopoly. The Pennsylvania railroad has been the controlling factor in the Baltimore & Ohio and the Norfolk & Western by ownership of considerably less than one-half of their capital stock.

In Wall street it has long been an accepted principle that control of a property could be effected by ownership of less than one-half. The street has clung to the idea that the line which distinguishes a competing corporation from a trust could not be drawn so as to apply universally. The share of a trade which might enable one corporation to control it would be inadequate in the case of another trade. Mr. Bryan's original Madison Square definition was sufficiently broad. But in designating 50 per cent as being the proportion of the product which a company must control in order to be a trust he is stating something that is manifestly absurd.

The Cincinnati Enquirer.

Mr. Bryan has announced an infallible way of determining when a corporation becomes a monopoly, by a method of mathematical computation, fixing a standard which is to be final and accepted by everyone. When silver was the issue it was not only to be free coinage, but it was to be for all time exactly at the ratio of 16 to 1. There was something sacred and inviolable in those figures. So now when a corporation has come to acquire 50 per cent of any business it is to be exterminated. Mr. Bryan does not disclose how it is to be ascertained when this point has been reached, but it is evident that it must be wholly guesswork. Nor does he prescribe what a corporation is to do when it approaches the dead line. Is it to cancel its contracts, destroy its raw material and reduce its output? Suppose an individual by inventive genius and a long series of laborious and expensive experiments has secured a profitable monopoly by patent, is the sacred 50 per cent rule to apply to him? Monopoly should be equally odious and subject to destruction, however created, and whenever it exists. Mr. Bryan's government ownership plan is not winning favor, except with declared socialists, and there is ample time between now and 1908 for the people to give careful consideration to some of his other theories.

The New York World.

All trusts are divided into "good" trusts and "bad" trusts, according to Mr. Roosevelt. It is a matter of morals. With Mr. Bryan it is a question of the output that they control. They are bad if they control more than 50 per cent of the output and good if they control less. That is to say, 49 per cent admits a trust to the advertising columns of the *Commoner* and 51 per cent bars it and classes it with pure reading matter. Further than that, Mr. Bryan would restrict federal licenses to corporations on a similar basis.

Between famous trust-hunters like Mr. Roosevelt and Mr. Bryan some compromise ought to be possible. Mr. Bryan's percentage system is undoubtedly the more scientific. But Mr. Roosevelt's instinct for moral principles is infallible. Then why not settle the whole problem on purely non-partisan lines by combining the two systems in one and ending the trust evil once for all?

For instance, a trust which after federal inspection shows an average of less than 50 per cent in morals for a quarter shall be regulated and be required to paste on its steel rails or oil cans a neat government label declaring that it is "Bad." Above that average all trusts shall be permitted to advertise at the expense of the government, in the *Commoner* or elsewhere, that they are "Good."

Naturally such a system of rigid regulation will cause all trusts to strive after high marks in morality because of the adantages gained by the government's stamp. Their sales will increase, and necessarily their output. But even Mr. Bryan will admit that we cannot have too much of a good thing. On the other hand, it will be a perfectly simple matter to crush a grasping monopoly and reduce its output by labeling its products "bad" for a few months or even years. As Mr. Bryan says that he is only contending for a principle and as Mr. Roosevelt is a very practical minded man in the application of rules of conduct, both should agree that by joining forces they will have settled the trust problem at one stroke.

New York Globe.

THE IRON TRADE REVIEW is proud. It has partially smoked out of his indefinite anti-trust demagogy Nebraska's advocate of double-jointed government ownership of railroads. It is no small achievement to pin down in any respect so nimble a flea.

Touchin' on and appertainin' to the colonel's declaration in his Madison Square Garden speech that no corporation should be allowed to do business if it controlled more than a certain per cent of the total product of the industry, THE TRADE REVIEW plumped the question of what should be the dead line percentage. Calling attention to the United States

Steel Corporation the following table was submitted showing the percentage of its production and the percentage of its competitors' in 1905:

Products.	Corporation.	Independents.
Iron ore	43.4	56.6
Coke	37.9	62.1
Pig iron	44.2	55.8
Crude steel	60.2	39.8
Finished rolled products	47.3	52.7
Wire nails	66.1	33.9
Tin plates and terne plates	71.3	28.7

In view of these facts it was asked to what extent should the steel trust's plants be scrapped. To this inquiry Mr. Bryan cautiously replied: "I am not prepared to state just how much a proportion a corporation can control without becoming a trust," and then, in a burst of candor, added:

"For the conduct of my own paper, I draw the line at 50 per cent, and do not accept an advertisement of a corporation controlling more than 50 per cent of the product in which it deals."

This is making progress. Forty-nine and one-half per cent—the business is untainted and need not be worried over; fifty-one and one-half per cent—it is rotten to the core, and hob-nailed legislation should stamp it out. The steel trust's ore digging, coke burning, pig iron making, and steel rolling are without menace; but in the name of all that is sacred its output of crude steel, wire nails, and tin plate should be lessened. Mr. Bryan is fond of ratios; pried loose from that of 16 to 1 with respect to coinage, he raises the banner of 2 to 1 in industry.

Detroit Free Press.

Their ability to control the market and to dictate prices depends upon more than one factor, and in many instances the control of thirty per cent of the product enables a corporation to dictate prices with more surety than the control of seventy per cent could enable another corporation differently situated as to raw material, transportation, patent rights, tariff, the natural or vacillating demand and the character of the organization. No arbitrary line can be drawn. The proof of the pudding is in the eating. But even could a line be drawn, certainly the Bryanic estimate of fifty per cent is foolish. By owning and controlling fifty per cent of the output a corporation controls the entire output, for all practical purposes. The other fifty per cent is divided into infinitesimal parts. By virtue of its organization the corporation controlling fifty per cent is arrayed against the one per cents. Without hitting at the exchequer of the *Commoner* we are obliged to intimate that Mr. Bryan has been taking in tainted money. His fifty per cent would sow the nation with trusts and monopolies. The free and unlimited coinage of trusts at the ratio of fifty to one would be a mighty bad thing for the owners of the other forty-nine.

Gazette-Times, Pittsburg.

Mr. Bryan's plan is equivalent to placing a limitation upon enterprise. If a company builds up business, enlarges its factories, gives employment to an increased number of men, pays out a larger sum in wages, and then finds that it has crossed the Bryan dead line—beyond which it is illegal to pass because it conflicts with his beautiful theories—it must stop. A sufficient number of its men to square with the law must be discharged, to the distress of their families, whether there is work elsewhere or not; invested capital must become a dead loss, and unenterprising competitors must get the trade—all because energy, capacity and good management have yielded their legitimate fruits. That is certainly a charming plan to advocate to the American workingman. It won't go, however, either in this year of grace or in 1908.

New York Evening Post.

Mr. Bryan has found a mathematical determinator for the good and bad trust as shadowed forth by Mr. Roosevelt. When a corporation produces more than 50 per cent of any product, its advertising is refused by the *Commoner*. Here is the long-desired signpost, by regarding which a corporation manager, though a fool, may not stray from the narrow path. Let him advertise in the *Commoner*, whose publisher will inform him the moment the 50 per cent dead-line is passed. Or, if he sees his business running into the "roaring forties," let him look well to it; reduce his agencies, stave off contracts, devote surplus profits to charity, and send his raw material to the dumps. We fear that, with the best will in the world, a few corporations will spill over into the fifties; but this, being a sin without malice, is venial and absolution can doubtless be secured at the usual space rate from St. William of Lincoln. It is only those who obdurately usurp more than half the business in their trade who need dread perpetual excommunication. As for the mere figuring in the premises—an indispensable, if an ignoble, detail—we presume that Mr. Bryan, as an accredited financial statistician, will make himself personally responsible therefor. In any case, as 16 to 1 disappears from the roster of crimes, a new cipher, 50 +, looms with sinister significance.

New York Sun.

After many years of purple fulmination at the trusts the Hon. William Jennings Bryan gives the wayfaring man a recipe for knowing a trust when he sees it:

"For the conduct of my own paper I draw the line at 50 per cent and do not accept an advertisement of a corporation controlling more than 50 per cent of the product in which it deals."

In his office trusts are weighed even as souls were in the Egyptian underworld. "Forty-nine, ninety-nine, plus: be good enough to step up to the cashier's office." "Fifty, plus: away, caitiff, to the burning marl!"

Will not Mr. Bryan apply his simple, practical test to the industries of the United States and ascertain just how many trusts there are in circulation? Or should we say, how few?

TRADE PUBLICATIONS.

The Atlas Engine Works, Indianapolis, is distributing bulletin No. 131, describing the Atlas throttling and automatic single valve engines. The engines are ranged in size from 7 x 10 inches to 16 x 18 inches and from 10 to 600 horsepower. The Atlas twin coupled throttling heavy duty engine is also described, ranging in size from 9 x 13 to 26 x 30 inches and from 40 to 1,000 horsepower.

The Atlas Engine Works, Indianapolis, is distributing bulletin No. 132 describing the Atlas medium speed automatic four valve engine. The valves of this engine are located in the cylinder heads, thus reducing the clearance to a minimum. The engines are built in nine sizes ranging from 11 x 14 to 19 x 18 inches and from 53 to 287 horsepower, respectively.

The C. Lee Cook Mfg. Co., Louisville, Ky., has issued a catalog describing Cook's metallic packing. This practically consists of a combination of springs and babbitt metal packing rings, which are forced together to make a steam tight joint. It is made up of a number of different forms for use in different services.

The Bickford Drill & Tool Co., Cincinnati, describes in its 1906 catalog the very complete line of radial drills built by it. A number of different types are shown, including the 2½, 3 and 3½-foot standard radial drills, with plain, swinging and swiveling tables, an improved radial drill, a back geared semi-radial, plain and adjustable wall radial drills and other types of radials with various styles of table. The machines illustrated are for belt, motor or special drive.

The Crescent Machine Co., Leetonia, O., has issued a catalog describing the Crescent wood working machinery. This comprises band saws, saw tables, jointers, etc. Included in the list of band saws is the Crescent angle band saw, an especially convenient machine for bevel work.

MATERIAL: ISSUANCES.[1]

By F. E. Webner.[2]

This part of the work of cost keeping is an extremely important one, and by all means the physical as well as the clerical branches should be under the immediate supervision of experienced clerks.

Where it is possible all material and supplies should be under lock and key, or at least under most careful surveillance, and should be removed from stores by none other than those in whom is vested the proper authority. For purposes of cost keeping it is not positively essential that a separate store room be maintained, although it is advisable where it can be so arranged; if no store room is maintained, the entire factory can be assumed to be a gigantic store room, but in the latter case the records should be maintained just as though the goods were all under lock and key, that is to say, a material requisition (stores order) should be issued and should pass through regular channels. Where material is open to whomsoever desires to walk up and take it, there can never be anything like accuracy in accounting, for the reason that workmen will not properly record what they have removed from stock; they, as a class, consider anything outside of direct productive labor as red tape and an unnecessary evil.

At times workmen will spoil goods in process by careless workmanship and, being human, will want to keep the facts sub-rosa. Where a new supply of raw material is at hand the trick is an easy one, although more costly than at first would be supposed for the reason that, while the rough casting spoiled will not be expensive, the labor put upon it will have been perhaps more costly by far than the material, but the two of which, together with the burden of overhead expense laid upon it, makes the cost to be considered. Yet of more importance than the total money value of the material, labor and expense elements that will have been lost is the fact that the volume of factory output has been lessened to a degree and each successive failure or case of spoiled work deteriorates the efficiency of the force to such an extent that where workmen have carte blanche to replenish spoiled material the natural tendency is for such workmen to grow careless and at times even lackadaisical in their work. At a certain machine shop situated upon an Ohio canal the writer has in mind being present when, upon the emptying of the waters of the canal, an astonishing collection of machined steel castings was disclosed, being in various stages of completion, but all apparently having been spoiled by either carelessness or poor workmanship and none by accident. Directly after the incident the management had an inspiration and a storekeeper was installed, which resulted in time in a shaking up of the force and the dismissal of several machinists for cause.

The subject of waste in a factory is a complex one with which to deal and, although not generally appreciated, one of the most important and vital features is a full utilization of factory capacity and the only positive and at the same time the shortest and quickest way to reach the facts, is through factory accounting which, incidentally, besides disclosing poor workmanship and spoiled material, is a tell-tale upon the product of individual machines enabling the management to know that every machine is operated to its maximum on the class of work for which possibly it was especially built and that its capacity is not partially wasted by less important work to the exclusion or delay of regular work.

Material Requisitions.

The subject of material requisitions or stores orders is a broad one, owing to the fact that machine shop product varies so widely in different shops.

In one line of product it may require perhaps seven or eight months from the time the factory order issues for the building of a given number of machines up to the time the first machine of the lot is finished, while in another plant the productive orders for component parts in elements made up for stock are issued at such times as it appears necessary to keep the visible supply of such parts, integrants on elements at the required number. In the latter case the order for a given number of completed machines is practically an assembling order only.

Where a given number of finished machines are to be made on one factory order number, such order number absorbs all charges for material made against it from start to finish save only those parts of the machine which, being interchangeable with other machines of like character, have been previously made up for stock or, perchance, the requisite number not being on hand necessitates the issuance of a special order to replenish the stock and, preparing in advance for future calls on the stock, a larger supply is ordered than immediate needs demand, then the order for such integrants or component parts is given a separate order number and the material thereon is charged to such separate order number and not to the order number for the finished machines. The parts made on the separate order number are, when completed, credited to goods in process and charged to semi-finished product and semi-finished product is to be carried on the records in a manner like unto material and issued upon a requisition or stores order.

The charges to semi-finished product producing orders are handled identically the same and the synthetical record is under goods in process-material in both cases, the analytical record being under the respective order numbers.

Issuance of Material.

The modus operandi for issuance of material for integrants of elements under this class is preferably a large sized tag consecutively numbered and perforated and the upper portion having a space for date, order number, name of part and any other relative data that may be desired while the lower portion or coupon has simply the order number followed by a list of the articles of material required, which list is detached by the storekeeper upon the issuance of the specified material. In the regular course of events the coupon with others of its kind are listed upon a sheet headed "Store Room Coupon Analysis" and having columns for instance for "Order No.," "Goods in Process Dr.," "Store Room Cr.," the latter having as many subheadings as it is desired, representing the various groupings into which the material is divided, the most generally used being

a Iron Castings
b Steel Castings
c Malleable Castings
d Brass Castings
e Bar Steel
f Bar Iron
g Screws
h Sundry Material.

The storekeeper may retain a carbon copy of the sheet if desired, but the original sheet together with the coupons is sent to the cost department where the coupons are by individual items entered upon the stock ledger and at the same operation are priced and when all items have been posted extensions are made and groups totaled in such manner as to permit of the proper totals being shown in the columns of the coupon analysis.

The coupon is then filed away under the shop order number while the clerk who gets the coupon analysis posts the various columns and prepares it for entry upon a recapitulation sheet through the means of which the figures find the way to the general exhibit, the total of the "Goods in Process Column" being passed to the debit of "Goods in Process Material," while "Store Room" gets credit for a like amount; the analysis of material grouping being maintained by means of the recapitulation sheet and not ordinarily displayed on the exhibit.

Charges to the individual factory order numbers being usually made from

[1]Fourth of a series of twelve papers on "Cost Keeping."
[2]Certified public accountant, Cincinnati.

the analysis sheet by posting the items appearing in the "Goods in Process" columns after each successive order number.

When the factory order for semi-finished product is completed the upper portion of the tags are returned to the cost department where they are listed upon a sheet (punched for a binder) having the following named column:

- Date
- Shop order number
- Quantity
- Check mark columns:
  - Order card
  - Cost card
  - Stock ledger
- Material cost
- Labor
  - Cost
  - Hours and minutes
- Expense
  - Burden rate
  - Cost
- Premium (when used)
- Total cost

The order clerk will get this form together with the accompanying tags and will enter "Finished" on his order cards and place a check in the first check column. The sheet will next go to the cost clerk and as soon after all time and costs are in for the various items the proper amounts will be abstracted from the cost records and the sheet totaled and sent for entry on the general exhabit, preferably through the means of a recapitulation sheet. "Semi-finished Product" will be charged with the total of the "Total Cost Column" and "Goods in Process" will be credited under "Material," "Labor" and "Expense" respectively. Either after or before entry on the exhibit the sheets can go to the stock ledger clerk for him to post the individual parts as shown. As hereinbefore stated the parts are then issued on requisition or stores order in like manner with material.

In the case of material and parts for the assembling or completing order a larger form of requisition is used having something like the following columns:

Requisition for material and parts to be laid out on shop order No. ———

- Names of part
- Drawing room O. K.
- Part number
- Number needed
- Store room data
  - Number in stock
  - Number ordered
  - Date due
  - Check column
- Cost per unit
- Extensions
  - Finished parts
  - Castings
  - Steel
  - Screws
  - Sundry material

The filling out of this form is usually done from the detail of the machine and oftentimes the machine parts will run as high as two hundred and fifty and the individual items many times that number. This sheet can be made out in the cost department, one sheet being filled out complete and sent to the store room and another copy filled out only with the shop order number and retained in the cost department in a binder with others of its kind. Storekeeper can check off of this form all tags for finished parts as they are received by him, if they have been made on separate order. One or more times during each month or four week period the storekeeper's binder can be sent into cost department and those articles which are checked off as having been issued can be copied, extended and totaled so that the general exhibit can be made to show the material as credited to the store room and charged to "Goods in Process."

For sundry issuances to replace spoiled parts any ordinary form of requisition blank can be used and listed on a requisition analysis with columns as follows:

- Date
- Issued by
- Charge to (or name of part used on)
- Posting check columns
- Shop order number
- Posting check
- Finished parts
- Castings
- Steel
- Screws
- Sundry material.

This sheet when filled being in the ordinary course of events posted to the stock ledger and the cost ledger.

PROFIT SHARING PLAN BENEFITS EMPLOYES.

If there is no radical change in the price of the preferred stock of the United States Steel Corporation over the next three months employes will probably be given the privilege of subscribing to the stock on a basis of par next year, the same figure agreed upon in the current year.

Employes were first given the privilege to subscribe for the preferred stock of the United States Steel Corporation early in 1903, and since then they have taken 123,464 shares of the par value of $12,346,400. The cost to employes averaged $81.25 for the four years, or $9,801,181, and the present market value of the stock is $13,200,911. In other words, subscribers under the profit-sharing plan, provided they have kept their stock, have a profit of $3,399,730, based on the present market price.

On Jan. 1, 1906, the year in which the employes were given the privilege of subscribing to the preferred stock at par, the market value was in the neighborhood of 106½. On the first of January, 1905, when the stock was offered at $87.50, it closed at 93⅞. On Jan. 1, 1904, the preferred sold 57⅞, against $55, at which figure it was offered to subscribers. The original offer was on a basis of $82.50, in 1903, and on Jan. 1 of that year the preferred was quoted at 85⅞.

The following table shows the amount of stock taken by the United States Steel employes, the price paid and present market value:

	Price paid	Shares taken	Cost to employes	Present mkt value
1906	$100.00	23,989	$2,398,900	$2,557,086
1905	87.50	17,973	1,572,638	1,923,111
1904	55.00	32,519	1,788,545	3,479,533
1903	82.50	48,983	4,041,098	5,241,181
T'tl's	*81.25	123,464	9,801,181	13,200,911

*Average price per share paid by employe.

Appreciation from purchase price, $3,399,730.

At the close of the current year the profit-sharing plan shall have been four years in operation. When United States Steel preferred was selling around 50 the management, in order to ease the minds of the employes as to the results of their investments, issued a circular which stated that all who retained their stock until January and February, 1908, could return it to the corporation and receive $82.50 a share, less rebates and benefits, provided they were disposed to part with it, the holders at the same time being entitled to the difference beween interest and dividends. As the stock purchased so far has averaged $81.25 per share, there is little danger of the employes sustaining any loss.

The employes of the Steel Corporation will also benefit this year through the pronounced prosperity of the steel industry, as wages have advanced proportionately.

The following table shows the average number of employes of the Steel Corporation, and average yearly wage per man, over a series of years:

	No. employes	Total wages	Wages per man
1905	180,158	$128,052,955	$711
1904	147,343	99,778,276	677
1903	167,709	120,763,896	720
1902	168,127	120,528,343	716

Indications are that the average wage per man in 1906 will run close to the figure reached in 1903, although prices for material in that year were higher than the quotations that have prevailed in the current year.

The Prescott Co., Menominee, Mich., will be in the market for cold saws and for general foundry supplies in connection with important additions now being made to its foundry.

Stocks Decline in Irregular Market.

The stock market of the past week was largely dominated by a varied assortment of news developments, the net result of which was to produce ragged, spasmodic trading and close the week with a somewhat reduced price level. Political and governmental affairs were prominent factors in establishing the market. The nomination of W. R. Hearst as candidate for the governorship of New York was generally deplored by business interests and the conservative public. It is admitted that his candidacy has strong support in the "element of discontent," but the effect of his nomination on the market was surprisingly small. A disturbing factor was developed through the course of affairs in Cuba, ending with the proclamation of Secretary Taft, late in the week, that the United States government would assume control of affairs in the island and would maintain its provisional government until peace had been restored. This course of procedure was productive of little foreign criticism and failed to exert much market influence. The money situation was considerably relieved during the week by the announcement by Secretary Shaw of his intention to deposit $26,000,000 of government deposits in banks, principally in the smaller cities. Call loans were fairly high, though not abnormally so, but time loans were stringent. Gold importations continued to arrive and the total engagements during the present movement now amount to over $35,000,000. A semi-official announcement of the consummation of the Hill ore deal was made on Friday. Total sales for the week aggregated 6,927,400 shares on the New York exchange. Amalgamated Copper, Reading, Southern Pacific, Union Pacific and Steel common sold over 500 shares each.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quotation Sept. 22	Closing Quo. Sept. 29	Changes	Date of 1906 Ann. Meet.	Par Value	Capital Outstanding	Dividend Basis	Dividend Being Paid	Dividend Date Last Div. Pay.
Allis-Chalmers Co	17	17⅛	+ ⅛	Sept.	100	19,820,000			
Allis-Chalmers preferred	40	41⅜	+ ⅜		100	16,150,000	7 cum		Feb., 1904
American Can	7	6⅞	− ⅛	Apr. 24	100	41,233,300			
American Can preferred	58	56½	−1½		100	41,233,300	7 cum	5 Q.	Oct., 1906
American Car and Foundry	43⅜	45⅛	+2⅛	June 28	100	30,000,000			May, 1905
American Car and Foundry preferred	101	101			100	30,000,000	7 n. c.	7 Q.	Oct., 1906
American Locomotive	75	73¼	−1¾	Oct. 16	100	25,000,000		1¾	Nov., 1906
American Locomotive preferred	114	111	−3		100	24,100,000	7 cum	7 Q.	Oct., 1906
American Shipbuilding	60½	61⅛	+ ⅛	Oct. 2	100	7,600,000	4 n. c.	1 Q.	Aug. 1906
American Shipbuilding preferred	108	108½	+ ½		100	7,900,000	7 n. c.	1¾ Q.	Aug. 1906
American Steel Foundries	11	10⅜	− ⅝	Oct. 3	100	17,700,000			
American Steel Foundries preferred	45½	44	−1½		100	17,700,000	6 cum		Aug., 1905
Barney & Smith	74	74		June 5	100	1,000,000	4	4	Sept., 1906
Barney & Smith preferred	140	140			100	2,500,000	8 cum	8 Q.	Sept., 1906
Bethlehem Steel	25	20	−5	April 3	100	15,000,000			
Bethlehem Steel preferred	84	65	−19		100	15,000,000	7 n. c.	7 Q.	Aug., 1906
Bullock Electric preferred	112	112		Oct. 2	100	1,000,000	6	6 Q.	July, 1906
Cambria Steel	38	38⅛	+ ⅛	March 20	50	45,000,000	6	3 Q.	Aug., 1906
Cambria Iron	49	49			50	8,468,000	4	4 S. A.	Oct., 1906
Colorado Fuel & Iron	56⅞	54	−2⅞	Oct. 15	100	30,132,000	7		Apr., 1902
Wm. Cramp & Sons Ship & Eng. Bldg. Co.	18	18		May 31	100	6,098,000	5		Nov., 1902
Crucible Steel	12⅝	11¾	− ⅞	Oct. 17	100	25,000,000			
Crucible Steel preferred	78½	78¾	+ ⅜		100	25,000,000	7 cum		Sept., 1906
Empire Steel	5	5		Feb. 28	100	2,281,400			
Empire Steel preferred	40	40			100	2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	95	95		Feb. 20	100	1,000,000	6	6 Q.	Aug., 1906
Fay & Egan preferred	128½	128½			100	1,000,000	7 cum	7 Q.	Aug., 1906
General Electric	166¼	164½	−1¾	May 8	100	48,256,050	8	8 Q.	Oct., 1906
International Pump	48½	46¾	−1¾	June 5	100	12,262,500		2	July, 1905
International Pump preferred	85	83	−2		100	8,850,000	6 cum	6 Q.	Aug., 1906
Lackawanna Steel	72	72		March 14	100	34,971,400			
Lake Superior Corporation	17	17		Oct. 3	100	40,000,000			
Niles-Bement-Pond	130	130		Feb. 7	100	5,000,000	6	6 Q.	Sept, 1906
Niles-Bement-Pond preferred	105	105			100	2,000,000	6 cum	6 Q.	Aug., 1906
Otis Elevator Co	50	50		March 19	100	6,350,300		2 A.	Apr., 1906
Otis Elevator Co. preferred	96	96			100	5,589,500	6 n. c.	6 Q.	Oct., 1906
Pittsburg Coal Co	15	15		Feb. 12	100	30,135,000			
Pittsburg Coal preferred	55	54	−1		100	30,716,200	7		Apr., 1905
Pressed Steel Car	54½	54⅛		Feb. 21	100	12,500,000			Aug., 1904
Pressed Steel Car preferred	97⅞	98	+ ⅛		100	12,500,000	7 n. c.	3	Aug., 1906
Pullman Palace Car	254	260	+6	Oct. 18	100	74,000,000		7 Q.	Aug., 1906
Railway Steel Spring	57½	56	−1½	March 1	100	13,500,000		8 Q.	Aug., 1906
Railway Steel Spring preferred	103	100	−3		100	13,500,000	7 cum	4 S. A.	Oct., 1905
Republic Iron & Steel	37⅜	37⅛	− ⅜	Oct. 17	100	27,352,000		7 Q.	Sept., 1906
Republic Iron & Steel preferred	99¼	97	−2¼		100	20,852,000	7 cum	7 Q.	Oct., 1906
Sloss-Sheffield	75	74½	− ½	March 14	100	7,500,000	5	5	Oct., 1906
Sloss-Sheffield preferred	106	106			100	6,700,000	7 n. c.	7 Q.	Oct , 1906
Tennessee Coal & Iron	159	158	−1	May 15	100	22,552,800		4 Q.	Nov., 1906
U. S. Cast Iron Pipe & Foundry	48	48½	− ½	June 27	100	12,500,000		2	Sept., 1906
U. S. Cast Iron Pipe & Foundry preferred	91⅝	91½			100	12,500,000	7 n. c.	7	Sept., 1906
U. S. Steel	45½	45½		April 16	100	508,302,500	2 n. c.	½ Q.	Oct., 1906
U. S. Steel preferred	108¾	106	− ¾		100	360,281,100	7 cum	7 Q.	Aug., 1906
U. S. Steel 5's	98½	98½	+ ⅜		100	463,798,000	5	5 A.	
Virginia Iron, Coal & Coke	52⅞	51⅞	−1	Sept. 18	100	8,641,600			
Westinghouse Electric	153	152	−1	June 27	50	20,998,350	10	10 Q.	Oct., 1906
Westinghouse Air Brake	170	166¼	−3¾	Oct. 2	50	10,990,450	30	30 Q.	Oct., 1906

FINANCIAL NOTES.

The Cincinnati Milling Machine Co. has listed with the Cincinnati stock exchange $1,000,000 of eight per cent common stock and $500,000 of six per cent preferred stock.

Recent dividend declarations include the following: American Seeding Machine Co., quarterly, 1½ per cent on preferred and 1 per cent on common, payable Oct. 15; La Belle Iron Works 2 per cent, payable Nov. 1; Railway Steel Spring 2 per cent on common stock, payable Oct. 20.

Nova Scotia steel directors have declared the usual 2 per cent dividend on the preferred stock for the current quarter, payable Oct. 15. Books close Sept. 29, and re-open Oct. 6.

The business of C. M. Heeter at Butler has been incorporated under the name of C. M. Heeter, Sons & Co., with a Pennsylvania charter.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The United States Pipe Co., Chicago, Ill., has been incorporated to manufacture, buy and sell iron pipe, castings, fittings, iron and steel products, ores, etc. The capital stock is $50,000 and the incorporators are Ed. W. Everett, W. H. Jacobs, B. Esterline, E. C. Maher and A. C. Marriott, all of Chicago.

The Eagle Metal Works Co., St. Louis, Mo., has been organized to deal in all kinds of metals and to erect all kinds of structures, composed wholly or in part of metals. The capital stock is $5,000, and the incorporators are John Mesker, Chas. A. Knox and William Slavin.

The Electric Operating Construction Co., 49 Wall street, New York City, has been incorporated with a capitalization of $1,000,000 to manufacture engines, boilers, machinery and railway supplies. The incorporators are Alfred D. Bowen, of San Francisco; W. A. Viele and G. C. Hutchinson, of New York; R. S. Masson, of Los Angeles, Cal., and W. D. Beardley, of Nyack.

The H. C. Chase Foundry Co., Chicago, Ill., has changed its name to the U. S. Yards Foundry Co.

The Milton Machine & Foundry Co., Milton, W. Va., has been organized with a capital of $5,000 to buy, sell and manufacture machinery and oil well supplies, conduct a general repair shop, etc. The incorporators are T. L. Morris, E. E. Dubbing, R. T. Neel, R. E. Thornbery and J. T. Graham, of Huntington.

The Birmingham Concentrating & Iron Co., Birmingham, Ala., has been incorporated with a capitalization of $50,000 to do a general foundry and iron business, and to deal in iron castings, machinery, scrap, etc. The officers and directors are R. H. Elliott, president; J. M. Stilwell, vice president; P. T. Whilden, secretary-treasurer, and J. J. Farmer.

The Niagara Wire Cloth Co. has been incorporated to manufacture and sell wire cloth and wire goods. The capital stock is $30,000, and the incorporators are W. Eugene Richmond, John H. Porter and James W. Murphy, all of Buffalo, N. Y.

The Rockland Machine & Foundry Co. has been organized to manufacture hydraulic dredging machinery. The capital stock is $10,000 and the incorporators are William E. Blakeslee, Hilburn, N. Y., and Gustavus L. Cudner, No. 210 West 13th street, New York.

The Morris Coupling Co. has been incorporated with a capital stock of $8,000 to manufacture shaft couplings and collars. The incorporators are Windsor Morris, Herbert Robinson, and Howard M. Baldwin, Baldwinsville, N. Y.

The Lewis Metallic Packing Co., No. 303 Washington street, Newark, N. J., has been chartered with a capital stock of $25,000 to conduct a machine shop and repair business. The incorporators are George H. Lewis, Newark, N. J.; Herman Zluhan, No. 16 Washington street, Belleville, N. J.; and James A. Harris, No. 149 West 125th street, New York.

The Rochester Implement Co., incorporated with a capital stock of $7,000, will manufacture machinery, tools, agricultural implements, etc. The incorporators are William H. Rowerdink, Charles L. Aird, and Wallace P. Frisch, all of Rochester, N. Y.

The Acme Machine Works, Charleston, W. Va., has been organized with a capital of $50,000 by G. T. Thayer, O. A. Thayer, J. A. Thayer, E. T. Crawford and J. E. Crawford, all of Charleston, W. Va.

The Steel Foundry Co., Cincinnati, O., has increased its capital stock from $100,000 to $200,000.

The Shenango Steamship Co., Cleveland, O., has increased its capital stock from $200,000 to $410,000.

The Cleveland Iron & Steel Works Co., Cleveland, O., recently incorporated with a capitalization of $10,000, which was later increased to $400,000, has changed its name to the Variety Iron & Steel Works Co.

The Never-Break Range Co., St. Louis, Mo., has been organized with a capitalization of $125,000 by Henry Landragan, Edward M. Lucas and John F. Hastedt.

The Hutchinson Fuel & Supply Co., Charleston, W. Va., has been incorporated with a capitalization of $300,000 by M. L. Hutchinson, C. E. Hutchinson, of Fairmont; V. L. Highlands, S. C. Denham and M. G. Sperry, of Clarksburg, W. Va.

The National Car Co., Ltd., has been organized with a capitalization of $1,000,000, and will erect a plant in Halifax, Nova Scotia, for the building of both wood and steel cars. John R. McLeod is secretary.

The Illinois Iron & Bolt Co., Elgin, Ill., will increase its capital stock to $1,210,000. The amount so realized will be used in adding new buildings and appliances to its present plant, and to establish a new concern in the iron and coal region of the south from which to supply its growing Mexican trade.

The Allis-Chalmers-Bullock, Ltd., of Montreal, will increase its capital stock from $1,200,000 to $2,500,000 on account of its rapidly increasing business.

The Connally-McIlheran Electrical Engineering Co., Chattanooga, Tenn., has been organized to engage in consulting and constructing engineering, sell electrical machinery and supplies and do repair work. The capital stock is $10,000, and the engineers identified with the new company are as follows: W. B. Connally, formerly electrical engineer of the Wellman-Seaver-Morgan Co., Cleveland, O.; W. C. McIlheran, formerly electrical engineer for the Decatur Car Wheel & Mfg. Co., Birmingham, Ala.; W. F. McAfee, electrical engineer for the Atlanta Steel Hoop Co., Atlanta, Ga., and H. A. Clark, electrical engineer for the United States Cast Iron Pipe & Foundry Co., Chattanooga.

The Mason Wrench & Tool Co., Chicago, Ill., has been organized to manufacture a general line of tools and railway appliances, making a specialty of a new patent wrench. A plant will be erected at Harvey, Ill. The capital stock of the company is $12,000 and the officers are H. W. Mason, president; G. H. Deeves, vice president; F. W. Glen, secretary, and J. D. Wineow, treasurer.

New Construction.—

The Warner Instrument Co., Beloit, Wis., is receiving bids for its new plant, to consist of a main building 100 x 200 feet, of cement construction throughout, of a two-story office building 50 feet square and a power house. A heating and purifying system will be installed to remove all dust from air entering the building.

The addition now being made to the plant of Fay & Scott, machine tool manufacturers and dealers, of Dexter, Me., is 40 x 70 feet, of concrete construction, and will be used for an assembling room. No equipment is required.

The Smith's Falls Malleable Castings Co., Ltd., Smith's Falls, Ont., has purchased a site fronting on the Rideau river, containing about 12 acres of land, upon which it will erect a plant duplicating its present one, and will equip it in the most modern manner for the production of malleable and steel castings. Several hundred hands will be employed. William H. Frost, Smith's Falls, Ont., is president.

The Seamless Tube Co. of America has let the contract for a brick and steel addition to its plant at Monessen, Pa., which will increase its floor space some 58,000 square feet.

J. H. Burns, of Madison, S. D., has secured a site in Watertown, S. D., for the erection of an iron foundry at that place. The manufacture of gasoline engines will probably be taken up later.

The W. E. Pratt Mfg. Co., Joliet, Ill., is making improvements which will double its present capacity, and will re-

quire the employment of about 450 men in the manufacture of castings. A new cupola has been installed, one new melting furnace has been added and another is now being put in blast.

Madden & Co., Rushville, Ind., are to erect a new building to provide a foundry room 50 x 100 feet and a two-story machine shop 50 x 130 feet.

The Fischer Machinery Co., Chicago, Ill., is to erect a two-story machine shop of mill construction on Carroll avenue at a cost of $15,000. Plans are now being prepared.

The iron and brass foundry for the Calumet & Hecla mine at Houghton, Mich., is now under construction, and the building will be enclosed before winter.

William Hollingsworth, 237 North Holliday street, Baltimore, Md., has awarded the contract for an addition to his machine shop at that place to John Cowan, 106 West Madison street.

The American Roll & Foundry Co., Canton, O., recently incorporated with a capitalization of $200,000, is to erect a plant consisting of steel buildings, iron roof and brick and glass walls. This will include a main foundry building, 60 x 160 feet, with a 30-foot lean-to, a a main machine shop building, 60 x 140 feet, with a 30-foot lean-to, and a brick power house, 50 x 38 feet. This will be equipped with a Buckeye engine 17½ x 21, a Crocker-Wheeler generator, 150 A. W., and a 72-foot by 18 inch tubular boiler, McIlvaine & Spiegle. The foundry will be served by one 25-ton and one 15-ton auxiliary hoist traveling crane, and the machine shop by one 25-ton crane furnished by the Morgan Engineering Co. Two 18-ton air furnaces will be installed, and a 35-ton cupola with a Sturtevant blower, motor-driven, and 10-ton jib cranes to serve the air furnaces. The Garrett-Cromwell Engineering Co., Cleveland, O., is engineer of the plant. Officers have been elected as follows: J. B. Baird, president; William Gardner, vice president; Ed. Langenbach, treasurer, and David B. Day, secretary. The machine shop equipment will be motor-driven.

The Electrical Railway Equipment Co., Cincinnati, O., has purchased a tract of land on which it will erect a building for the manufacture of electrical equipment, such as iron and steel tubular poles, line material, etc. W. B. Stout is general superintendent.

The Marion Foundry & Machine Works, Marion, Va., recently incorporated, is successor to the Marion Mfg. & Milling Co., organized in 1901 for the manufacture of stoves, castings and farm implements. A wooden machine shop, 48 x 162 feet, will be erected and either steam or gasoline will be used as power, as the present water power of the company will not be sufficient for the enlarged plant. An experienced foreman for the machine shop is sought.

The United States Furnace & Foundry Co., Darlington, Pa., with general offices at Pittsburg, may erect a plant at Niles, Mich., through the efforts of the Business Men's Association of that city.

Furnace B, of the National Tube Co., Wheeling, W. Va., is being fitted up with an ore conveyor whereby the ore can be taken direct from the cars to the furnace.

The Field-Brundage Engine Co., Jackson, Mich., manufacturing gasoline engines, is erecting a new office building and will enlarge its machine shop to twice its present size.

The Superior Steel Co., of Pittsburg, is making extensive additions to its plant at Carnegie, Pa., which include the erection of two cold mills, a hot mill and some new annealing furnaces. Work on two brick and steel buildings has been begun. When the additions now under way are completed the company will be enabled to roll strips up to 16 inches.

The Spring Steel Fence & Wire Co., Anderson, Ind., now erecting a brick building, 65 x 125 feet, will equip it with machinery for galvanizing castings by the electric process. Three galvanizing tanks are to be installed, enabling the company to handle pieces as long as 22 feet, and it expects to galvanize wire later on. Equipment has been purchased.

Extensions now being made to the plant of the Birmingham Iron Foundry, Derby, Conn., include a building 65 x 105 feet, steel and brick construction, and an addition to its foundry as well. It will be equipped with a new 10-ton air furnace, an additional cupola, with power cranes, etc., and will be practically a new roll foundry as this department is to be moved out of the main building to provide more room for regular work.

The American Standard Mfg. Co., 141 Broadway, New York City, manufacturing staple hardware, mechanics' tools, hardware specialties, etc., has installed certain machinery with which to prepare models of those articles which it intends to manufacture on a large scale. Somerville, N. J., is the location of the factory, and M. D. Converse is president.

The Berger Mfg. Co. has let the contract for making improvements at its plant in Canton, O., to the Schlieper Engineering Co., Pittsburg, Pa. The engines and boilers formerly used at the Waukesha, Wis., plant will be transferred to the Canton works.

The American plant of the Arthur Koppel Co., near Pittsburg, which is being erected by Dodge & Day, of Philadelphia, is progressing rapidly. The steel is now being erected and orders have been placed for the boilers, engines, generators and power house equipment. Specifications are out for five traveling cranes and the heating equipment. Much of the other equipment has already been placed and it is expected to have the shops in operation before the close of winter.

The Standard Tin Plate Co., Canonsburg, Pa., on account of its rapidly increasing business in the manufacture of terne and black plate, has added one more hot mill to its present train, giving it a six-mill plant, equipped with a bar mill. It had also increased its capacity in the manufacture of iron and terne plate and is operating its plant to the fullest extent.

The DeLoach Mill Mfg. Co., Atlanta, Ga., has purchased the old plant of the United States Pipe Works, at Bridgeport, Ala., which consists of a foundry building and pattern shop. The company will add two buildings, including a blacksmith and machine shop. The new plant will cost about $150,000, and considerable new equipment will probably be required.

The Niles Fire Brick Co. is building an addition to its plant, and its new capacity will be about 20,000 brick per day, increasing its output about 50 per cent. Blast furnace work is done almost exclusively.

The Northern Malleable Iron Co., St. Paul, Minn., will build a large malleable iron plant on property formerly occupied by the Bohn Mfg. Co. For a time the plant will be run by electricity secured from a local plant, but the company will probably soon be in the market for power equipment of its own.

The Kennedy Valve Mfg. Co. has let contracts for its new plant at Elmira, N. Y., including an iron foundry, machine shop, pattern shop and pattern storage building and several other structures. When the new buildings are completed the company will remove its present plant at Coxsackie, N. Y., but will require considerable new equipment. All machinery will be electrically driven. T. C. Flinn, who is superintendent of construction, has opened offices at 409-411 Realty building, Elmira.

The Pennsylvania Swedish Iron Co. has recently been reorganized with general offices at Cheswick, Pa., and has added two more knobbling fires. The officers of the company are: A. M. Bell, Pittsburg, president; Ambrose Beard, resident general manager and vice president, and Richmond M. Graff, Pittsburg, secretary and treasurer.

At the recent meeting of the board of directors of the Adams Tool Co., East Hartford, Conn., it was decided to enlarge the plant so as to enable it to fill orders already on hand. Machinery will be installed and the execution of the orders will be begun as soon as

a small additional amount of capital stock is subscribed for.

The Bartlett Steel Co., Joplin, Mo., will build a new steel plant to have an annual capacity of 12,000 tons. It is the intention of the company to install a complete new equipment and to perfect plans for a new working organization, including experienced and competent superintendents of each department. Henry W. Klare, formerly chief engineer of the Virginia Bridge & Iron Works, of Roanoke, Va., is superintendent in charge.

The Standard Scale & Supply Co., of Philadelphia, is building two scales for the Pennsylvania Steel Co., one of which has been finished and turned over, and the other will be completed in a few weeks. The scales are among the largest which have ever been constructed, and have a capacity of 150 tons. They will be used for weighing shipments by the company.

The Standard Pattern & Mfg. Co., corner Eleventh and North E streets, Richmond, Ind., it is reported, will double the capacity of its factory in the near future in order to take care of increasing business. The company is engaged in all kinds of machine work and drafting metal and wood patterns, and is advertising for more skilled hands to do its work.

The capacity of the chain and anchor manufacturing shop at the Charleston navy yard is to be almost doubled by means of a large addition which is to be built on the northeast side of building 103 and partly on the site formerly occupied by one of the famous wooden shiphouses, No. 68.

Extensive improvements are under way at the plant of the Union Iron Works, Spokane, Wash., which consist of a foundry, 125 x 184 feet and an erecting shop 72 x 150 feet, both of brick, and will cost about $50,000. When completed it will have one of the most up-to-date iron works in the northwest. It is expected to have the plant in operation by Oct. 1.

The Hicks Gas Motor Co., Waycross, Ga., manufacturer of gas engines and gas producers, has begun the erection of additional buildings to its plant including a foundry and a machine erecting department.

General Industrial Notes:—

The Johnstown Foundry, Machine & Car Co., Johnstown, Pa., has been purchased by George P. Suppes and his son, George O. Suppes, and the name will be changed to the Suppes Forge & Foundry Co., with George O. Suppes as manager. The plant makes a specialty of mine car parts, besides doing a general foundry jobbing business.

A receiver has been appointed for the Robinson Machine Co., of Monongahela, Pa. Liabalities are in the neighborhood of $100,000, with assets about the same.

The Western Steel Car & Foundry Co., Joliet, Ill., is to begin the manufacture of steel underbeams for freight cars in what is known as the old Fox plant in that city Nov. 15. The company operates a plant at Hegeswisch, Ill., and at Anniston, Ala., both of which are badly crowded. The factory acquired was first operated by the Fox Pressed Steel Co., which later consolidated with the Pressed Steel Co. It is now rented to the Western Steel Car & Foundry Co., which is controlled by the stockholders of the Pressed Steel Car Co. About 500 men will be employed.

Niles furnace, of the Carnegie Steel Co., Niles, O., is practically ready to be blown in after extensive repairs.

Machinery is being installed at the Marysville Machine Works, Marysville, Cal., and the plant is practically ready to begin the manufacture of centrifugal pumps, gas engines and other machinery.

The Bucyrus Steam Shovel & Dredge Co., South Milwaukee, Wis., has purchased the plant of the Manville Covering Co., adjoining its works in South Milwaukee. This four-story building, 100 x 150 feet in size, will be connected with the main works by an overhead bridge spanning a railroad track.

The A. D. Howe Machinery Supply Co., Wheeling, W. Va., took over an established building and is not planning any important extensions to its plant, but some new equipment will soon be required. Power washing machines and special machinery will be manufactured.

Brooke & McConnell, 711 Lewis building, Pittsburg, will hereafter carry on the business of advertising engineering products formerly conducted by H. M. Baxter. Both were formerly connected with Mr. Baxter.

The Seneca Chain Co., Kent, O., purchased the plant of the American Chain Co. at Zanesville, O., and will at once begin the operation of the new branch, employing from 80 to 90 men.

The Massachusetts Ball & Machine Co., Chicopee, Mass., has leased a factory at the corner of Gilmore and Cross streets for a term of five years, and will shortly install machinery for the manufacture of small steel balls for bearings and automobile specialties.

The Quinn Furnace Co. has put its charcoal furnace at North Gadsden, Ala., which has been rebuilt, in blast. The furnace has a daily capacity of 60 tons. The company has also begun the development of its iron ore properties at Rock Springs.

Fires:—

Fire in the brass foundry of the Kennedy Valve Works, Coxsackie, N. Y., on Sept. 15 caused considerable damage in that department and also to the sand, coal and coke sheds. The loss is estimated to be about $8,000.

The Lumberman's Tool Co., South Boardman, Mich., was recently destroyed by fire.

The building occupied by T. L. Clark & Co., Montreal, Can., as a brass manufacturing plant, was damaged to the extent of $5,000 by fire Sept. 21.

Trade Notes:—

The Canton Boiler & Engineering Co., Canton, O., is erecting a stand pipe for the Josephine Furnace & Coke Co., Josephine, Pa., dimensions, 80 feet high by 18 feet diameter. It is also building two large boiler stacks for the Canton Light, Heat & Power Co., 125 feet high by 26 feet diameter, two 6,000 column tanks for the General Fire Extinguisher Co., for installation in the Wm. Taylor Son building, Cleveland, Ohio, and a gas producer for the Industrial Gas Co., Flatiron building, New York.

The Cohen-Schwartz Rail & Steel Co., St. Louis, Mo., has purchased all the scrap iron and steel from the Ferris Wheel of the St. Louis Exposition. The iron will probably amount to 2,000 tons.

The Bethlehem Steel Co. has been given the contract for eight 12-inch guns and 44 sets of forging for smaller caliber guns. The Midvale Steel Co. received the contract for four 12-inch guns and 78 sets of forging. The Crucible Steel Co. received the contract for 32 sets of three-inch gun forgings and a number of the largest guns on which bids were tendered were reserved for the Washington navy yard. Secretary Bonaparte has sustained the award of the contract for supplying new boilers for the New York and Massachusetts to the Babcock & Wilcox Co.

The Kilbourne & Jacobs Mfg. Co., Columbus, O., has recently received a number of heavy orders from India and Mexico for cars suitable for plantation and construction work. To facilitate their building a large traveling crane is being installed by the Columbus Structural Steel Co.

The Allis-Chalmers Co., Chicago, is distributing the sixth edition of catalog No. 17, presenting its line of mining and quarry cars, skips and buckets. The cars are of side and end dump construction, of steel throughout, fitted with Anaconda and McCaskell axles.